

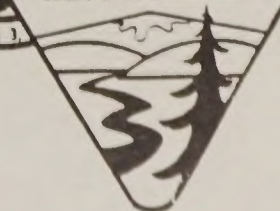


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# Utah BLM Statewide Wilderness Final Environmental Impact Statement

## Volume IV South - Central Region

U.S. DEPARTMENT OF THE INTERIOR  
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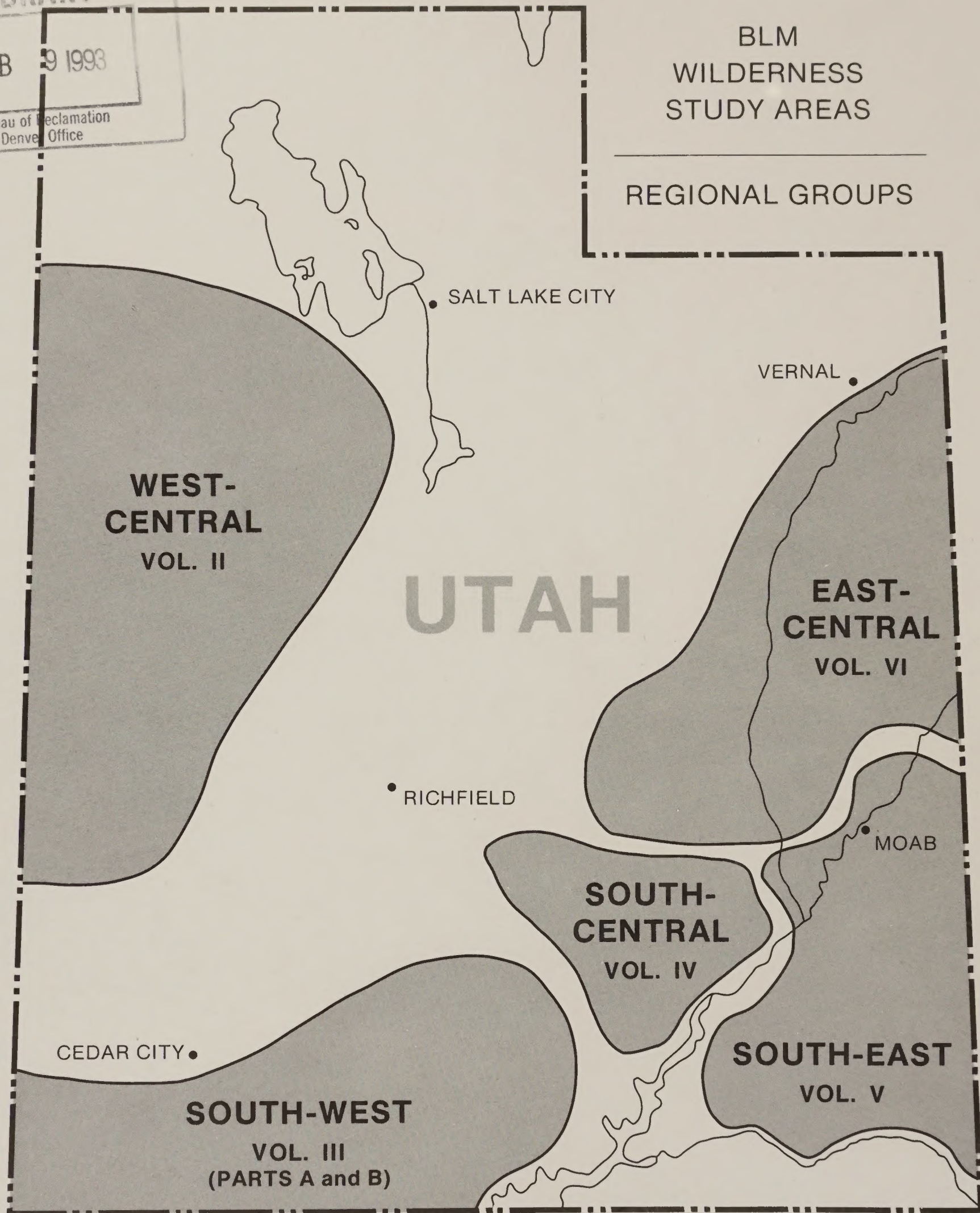
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This is **Volume IV** of a seven volume set. Volume I is the state wide overview. It contains the Glossary and Appendices for all volumes. Volumes II-VI contain analyses for individual Wilderness Study Areas. Volume VII (parts A and B) contain public comments and responses.



# INTRODUCTION TO VOLUME IV -- SOUTH-CENTRAL WSAs

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The Utah Bureau of Land Management (BLM) State-wide Wilderness Final Environmental Impact Statement (EIS) is comprised of seven volumes which include one individual analysis of each of 83 Wilderness Study Areas (WSAs) (Volumes II through VI), a State-wide overview (Volume I), and public comments and responses on the Draft EIS (Volume VII). The individual WSA analyses are grouped into volumes by geographic location. Volume IV is comprised of individual analyses of the following 10 WSAs located in the South-Central Region of Utah:

Map Reference Number	WSA	Acres
36	Mt. Ellen-Blue Hills	81,726
37	Bull Mountain	13,620
38	Dirty Devil	61,000
39	Horseshoe Canyon (South)	38,800
40	French Spring/Happy Canyon	25,000
41	Fiddler Butte	73,100
42	Mt. Pennell	74,300
43	Mt. Hillers	20,000
44	Little Rockies	38,700
G	Fremont Gorge	2,540

The alternatives analyzed for each WSA are: No Action/No Wilderness designation and All Wilderness, which would be designation of the entire WSA to the National Wilderness Preservation System (NWPS). In addition, one or more Partial Wilderness Alternatives are analyzed, where designation of a portion of the WSA would avoid conflicts between wilderness management and development and use of other resources, or where certain portions of WSAs have low quality wilderness values. Partial Wilderness Alternatives, based on wilderness values, would designate the portions of the WSA with outstanding opportunities for solitude, primitive recreation, and special features that are within a manageable boundary.

## CHANGES FOR THE FINAL EIS

In response to public comment and changing resource conditions and plans, the following changes have been made for the Final EIS for all of the South-Central WSAs:

1. The sections entitled Alternatives Considered and Eliminated from Detailed Study discuss citizen alternatives suggested during the public comment period.
2. New statements that further explain management of water resources, cultural resources, noxious

weeds, and predators have been added to the Analysis Assumptions and Guidelines for All Alternatives section.

3. The Affected Environment sections include new or updated information on wilderness values, geology, water resources, soil reclamation potential, threatened and endangered species, mineral resources, livestock grazing, land use plans, and economic conditions.

4. Issue identification sections have been revised and expanded.

5. The Environmental Consequences of Alternatives described in the individual analyses have been modified to address only significant issues.

6. The Analysis Assumptions and Guidelines for All Alternatives sections have been moved to the Introduction to Volume IV. The specific assumptions on potential future activities inside the WSAs have been changed as described in the Action Scenarios in the descriptions of the alternatives analyzed in the individual WSA analyses.

7. The position of the State of Utah on exchange of in-held State lands has changed from requiring exchange of in-holdings, to exchanging only when it is in the best interests of the citizens of Utah. In the Final EIS, it is assumed that State lands would not be exchanged, and access to in-held State sections could be required following wilderness designation.

8. The bibliographies for the region have been merged into a comprehensive bibliography that is located at the end of Volume IV.

Additional changes specific to WSAs are identified in the Introductions to the WSA analyses.

## ISSUE IDENTIFICATION

BLM used the information obtained from scoping meetings, workshops, comments received during the public comment period on the Draft EIS, and input from BLM professionals to identify the issues for detailed analysis. Issues related to wilderness in general are addressed in Volume I, the Statewide overview. Several Statewide issues also pertain to the South-Central WSAs.

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In determining the significance of issues, BLM considered the nature and magnitude of potential impacts, resources covered by law, requirements of BLM's wilderness review guidelines, and the level of public interest or concern over the potential impacts.

## ISSUES CONSIDERED BUT NOT ANALYZED IN DETAIL FOR THE SOUTH-CENTRAL WSAs

The only issues not treated in detail for any of the South-Central area are impacts on water rights and impacts on land use plans and policies.

1. Water Rights: In November, 1985, U.S. District Court Judge John Kane ruled (*Sierra Club vs. Block*) that Federal wilderness in Colorado carries an implicit water right. The public is concerned that wilderness designation would interfere with development of existing water rights and would establish Federal reserved water rights that would conflict with future filings, transfers, or changes in points of diversion for water use. After study of the issue by the Department of the Interior Solicitor, the Secretary of the Interior asked the U.S. Attorney General's Office for concurrence with the Solicitor's opinion. On July 28, 1988, the Attorney General (Meese, 1988) concluded that no legally sufficient basis exists for an implication of Federal reserved water rights for wilderness purposes. Therefore, impacts on water rights are not considered significant issues for analysis in the Final EIS.

2. Land Use Plans and Policies: Issues related to land use plans and policies include (1) consistency of wilderness designation with the plans and policies of BLM, other Federal agencies, and State and local governments; (2) impacts on management and use of in-held private and State lands; and (3) impacts on special land use designations, existing facilities, and future proposals for rights-of-way for communication facilities, power transmission lines, pipelines etc.

Wilderness designation as proposed in the Utah BLM Statewide Wilderness Final EIS is not addressed in current BLM land use plans. Wilderness designation is part of the BLM multiple-use concept, and the Statewide Wilderness EIS is linked to the current plans through inclusion of the plans as the No Action/No Wilderness Alternative. Congressional designation of all or part of any of the WSAs would amend the applicable BLM land use plans.

The Federal Land Policy and Management Act (FLPMA) and the BLM Wilderness Management Policy (found in BLM Manual 8560) require BLM to consider and document the extent to which BLM's recommendations are consistent with the plans and policies of other agencies and governments. Wilderness designation is perceived by State and local governments as a threat to the development of in-held State lands. The Utah State Legislature passed S.C.R. No. 1 in 1986 opposing any additional wilderness designation. The Consolidated Local Government Response to Wilderness (Utah Counties, 1986) also opposes wilderness designation of BLM lands in Utah. Designation of all or part of any WSA would not be consistent with the policies of State and local governments. The current policy of the State of Utah is to maximize economic returns and to reserve its position regarding exchange of in-held State lands. BLM has a policy that reasonable access would be provided to in-held State lands in response to proposals for development and use. The use of in-held lands will not be precluded by this proposal. The impacts on development of in-held State lands are not analyzed in detail. Likewise, BLM's Wilderness Management Guidelines require that access be provided to in-held private lands, and impacts of designation on the use of private lands are not an issue for detailed analysis.

The current plans and policies of the various agencies and governments relative to wilderness designation are described in the Affected Environment sections of the individual WSA analyses, under the heading, Land Use Plans, but consistency with land use plans is not analyzed in detail for each of the alternatives because further analysis would lead only to restatement of the conflicts explained above.

The affects of wilderness designation on specific proposals and existing facilities or rights in WSAs may or may not be significant issues. Refer to the issue identification sections found in the Introductions to the individual WSA analyses for further discussion on these and other resource related issues not presented here.

## ANALYSIS ASSUMPTIONS AND GUIDELINES FOR ALL ALTERNATIVES

The following analysis assumptions and guidelines are applicable to the analysis of the WSA alternatives described in the Final EIS:

1. The alternatives would be carried out as cited in the Description of the Alternatives section.



## INTRODUCTION TO VOLUME IV: SOUTH-CENTRAL WSAs

2. For the No Action/No Wilderness Alternatives and the nondesignated portions of WSAs with the Partial Wilderness Alternatives, it is assumed that BLM would manage according to the current BLM land use planning document. The following general management practices would apply to all of the South-Central WSAs:

BLM would establish and maintain land use management practices which assure the protection of water supplies and aquatic habitat from chemical, physical, or biological deterioration as defined by the Environmental Protection Agency (EPA) and State water quality standards to protect health of the public and other beneficial uses.

Private, commercial, and military aircraft use of airspace over the WSA would continue as at present.

Cultural resources would be protected by provisions of the Uniform Rules and Regulations (43 Code of Federal Regulations [CFR] Part 3) to carry out the Antiquities Act, the Historic Sites Act, Executive Order 11593, the National Historic Preservation Act, and the Archaeological Resources Protection Act. Cultural resources could be excavated, stabilized, or interpreted without regard for wilderness values.

Prior to authorizing surface-disturbing activities, BLM would consult with the U.S. Fish and Wildlife Service (FWS) as required under the provisions of the Endangered Species Act. Appropriate measures would be taken to protect endangered, threatened, or sensitive species.

Measures to control fire, insects, noxious weeds, or disease would be taken as required, if in conformance with land use plans and BLM guidelines.

Activities for the purpose of gathering information would be allowed by permit provided they are carried out in an environmentally sound manner.

Hunting would be allowed subject to applicable State and Federal laws and regulations.

Control of predators would be allowed without wilderness considerations and would be conducted according to State law and the Animal and Plant Health Inspection Service (APHIS) guidelines. Methods of control would be determined as appropriate.

3. With the All Wilderness Alternatives and for the portions of the WSAs that would be designated as

wilderness with the Partial Wilderness Alternatives, it is assumed that BLM would manage according to provisions of the BLM Wilderness Management Policy (BLM Manual 8560). The following general measures would apply to all WSAs (see Appendix 1 in Volume I):

All designated areas would be withdrawn from mineral location and closed to new mineral leasing and sale.

Livestock grazing would continue as authorized in the BLM land use plans. New rangeland developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness protection and effective management of these resources. Occasional use of motor vehicles, motorized equipment, or mechanical transport may be permitted where practical alternatives are not available.

New water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(1) of the Wilderness Act (Eighty-Eighth Congress of the U.S., 1964).

BLM would establish and maintain land use management practices which assure the protection of water supplies and aquatic habitat from chemical, physical, or biological deterioration as defined by EPA and State water quality standards to protect the health of the public and other beneficial uses. Management practices would be consistent with the BLM Wilderness Management Guidelines.

Prior to authorizing surface-disturbing activities, BLM would consult with FWS as required under the provisions of the Endangered Species Act. Appropriate measures would be taken to protect endangered, threatened, or sensitive species.

Wildlife transplants or habitat developments would be allowed if compatible with wilderness values. Projects would be considered for approval on a case-by-case basis.

Designated areas would be closed to off-road vehicle (ORV) use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions.

Specific Wilderness Management Plans would be developed that would guide the use and protection of the



wilderness areas. It is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or cherry-stem the wilderness areas for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the centerline of the road travel surface.

Private, commercial, and military aircraft use of airspace over the WSA would continue, but a minimum elevation of 2,000 feet would be encouraged by BLM and the Federal Aviation Administration (FAA).

Harvest of forest products would not be allowed in designated areas, except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. Increased vehicular access for harvest of forest products would not be allowed.

Cultural resources would be protected with the various antiquities and cultural resource protection acts. However, in most instances they would be subject to the forces of nature, and study and management would not normally include any excavation, stabilization, or interpretation activities. Exceptions would be allowed on a case-by-case basis after special approval of the BLM State Director.

Visual resources would be managed in accordance with Visual Resource Management (VRM) Class I standards which generally allow for only natural ecological change.

Measures to control fire, insects, noxious weeds, or disease would be taken in designated areas in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken would be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried out in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

Hunting would be allowed subject to applicable State and Federal laws and regulations, but would be limited to nonmotorized access.

Where control of predators is necessary to protect endangered or threatened wildlife species, or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals, while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns (M-44s) would not be allowed. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the areas.

4. Future users in WSAs would meet requirements for all applicable Federal, State, and local permits. Stipulations, mitigating measures, and reclamation procedures would be carried out in compliance with Federal, State, and local laws and regulations.

5. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources with wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation.

6. The impacts of wilderness designation would result from: (a) protection of certain resources; (b) denial of opportunity to develop certain resources; or (c) restrictions on or changes in allowable management practices and land uses.

7. The short term is defined as that time from the present to the year 2020. The long term is defined as beyond the year 2020. The term foreseeable future refers to both the short and long terms in reference to activities that are likely to occur in the WSA.

Although the degree of future development cannot be predicted accurately, Action Scenarios are presented for analysis purposes in the description of the alternatives. Based on known plans and proposals, known estimated resource values, and projections of future economic conditions, BLM believes the Action Scenarios describe activities likely to occur in the WSAs over the foreseeable future, if the alternative is implemented.



8. Development potential in many WSAs has been divided into short-term and long-term projections. Even within the short term, the quality of data varies. From the present time to about the year 2005, there are relatively good data with which to make development projections. From the year 2005 to the year 2020, little data exists. Development expectations are more speculative. Surface disturbance figures and subsequent environmental impact analysis in the Final EIS are based on activities projected in the foreseeable future.

9. Mineral evaluations and estimates of in-place mineral resources are based on a mineral resource evaluation of the WSAs by the Science Applications Inc. (SAI, 1982), U.S. Geological Survey (USGS), and U.S. Bureau of Mines (USBM) Mineral Survey Reports, where available, and subsequent evaluations conducted by BLM personnel. These estimates are generally based on literature studies and known mineral and energy activities in the vicinity of the WSAs. The analysis estimates the potentially recoverable mineral resources and then, using BLM's field experience and judgment, determines the probability of short-term and long-term development. (Appendix 6 in Volume I explains the mineral exploration and development projections, and Appendix 10 explains the estimates for surface disturbance from projected activities in the WSA.)

10. It is assumed that, once designated, management of WSAs as wilderness would continue over the long term.

11. The environmental consequences of alternatives analyze only the significant issues identified in the Introduction to the WSA analyses.







Volume IV  
South -  
Central  
Region

**Mt. Ellen-Blue Hills WSA**

**Bull Mountain WSA**

**Dirty Devil WSA**

**Horseshoe Canyon (South) WSA**

**French Spring-Happy Canyon WSA**

**Fiddler Butte WSA**

**Mt. Pennell WSA**

**Mt. Hillers WSA**

**Little Rockies WSA**

**Fremont Gorge WSA**







# Mt. Ellen - Blue Hills WSA



Coverage Information

Background

Land Use Plans

Recommendations

## ENTIREMENT CONSIDERATIONS OF ACTIVITIES

No Activities Within the Area

All Wilderness Activities

Total Wilderness Activities







# MT. ELLEN-BLUE HILLS WSA

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# MT. ELLEN-BLUE HILLS WSA

(UT-050-238)

## INTRODUCTION

### General Description of the Area

The Mt. Ellen-Blue Hills WSA contains 81,726 acres of public land (58,026 acres in south-central Wayne County and 23,700 acres in northeast Garfield County). The boundary is about 10 miles west of Hanksville, Utah.

The WSA possesses two distinct topographic areas: Mt. Ellen proper (11,615 feet) to the south, and the mesas and barren badlands to the west and north, including the Blue Hills. Vegetation on Mt. Ellen serves as habitat for bison, cougar, and mule deer. Predominant vegetation at lower elevations is pinyon-juniper woodland and saltbush while Ponderosa pine, Douglas fir, and alpine fir are found at higher elevations. The higher elevations offer outstanding views of central Utah and Waterpocket Fold.

Estimated annual precipitation ranges from 5 inches near the Fremont River to about 25 inches at the summit of Mt. Ellen. Temperatures range from as low as -20 degrees Fahrenheit (F) in the winter to over 100 degrees F in summer.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. A small portion of the boundary of the WSA (T. 30 S., R. 9 E., sec. 32) has been redrawn to correct an error in the Draft EIS maps. This change required adjustments to the in-held State acreage figure boundaries as shown in the inventory document and Final EIS.

2. The Draft EIS identified a Partial Wilderness Alternative of 58,480 acres. This alternative was designed to include as wilderness that portion of the WSA that possesses the most outstanding wilderness characteristics. In response to public comments received on the Draft EIS, approximately 7,460 acres, including South Caineville Mesa, were added and approximately 136 acres, Lonesome Beaver and Dandelion Flat Campgrounds, were deleted from the Par-

tial Wilderness Alternative. The new Partial Wilderness Alternative includes 65,804 acres of Federal land.

3. The anticipated surface disturbance presented in the Draft EIS (6,050 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 6,050 acres reported in the Draft EIS to 4,001 acres of surface disturbance for the Final EIS.

4. The Draft EIS identified 2,850 acres of chaining and seeding within the WSA to improve bison and mule deer habitat and to increase livestock forage production. However, BLM does not anticipate sufficient funding in the foreseeable future to complete all of these projects. As a result, the land treatment estimates have been revised downward to 1,000 acres in the Final EIS to reflect more realistic funding projections. This development would be for the purpose of improving bison and mule deer habitat. Estimates of potential increases in wildlife populations and livestock forage have been revised accordingly.

5. Cherry-stemmed areas were inadvertently omitted from the Draft EIS. These include two State sections (T. 30 S., R. 8 E., sec. 36 and T. 31 S., R. 8 E., sec. 2). Information on State in-holdings has been adjusted accordingly.

6. A portion of the northern boundary has been redrawn to show that the WSA boundary is on the south bank of the Fremont River, in T. 20 S., R. 9 E., secs. 28, 29, and 31.

STATEWIDE  
POCKET MAP  
WSA  
NO. **36**  
SEE VOL. I



## MT. ELLEN-BLUE HILLS WSA

The Draft EIS maps failed to show the river; consequently the boundary was extended to the legal subdivisions in those sections. However, it was and is BLM's intent to locate the boundary on the south bank of the Fremont River in this remand area. This change did not require acreage adjustments because acreage calculations were based on the south river bank as the boundary.

7. The Partial Wilderness Alternative would eliminate the Tercero Corporation trespass road from the WSA. This change from the Draft is too small to show on the map.

### **Specific Issues Identified Through Scoping and Public Comment**

#### **• Issues Considered But Not Analyzed in Detail**

Two issues which are not discussed for this WSA are impacts on land use plans and policies and impacts on water rights. These issues were considered and eliminated from further consideration in the Introduction to Volume IV.

#### **• Issues Analyzed in Detail**

The significant issues for the Mt. Ellen-Blue Hills WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on air quality.
3. Impacts on geology and topography.
4. Impacts on soils.
5. Impacts on vegetation including special status species.
6. Impacts on water resources.
7. Impacts on mineral and energy exploration and production.
8. Impacts on wildlife habitat and populations including special status species.
9. Impacts on forest resources.

10. Impacts on livestock management.

11. Impacts on visual resources.

12. Impacts on the preservation of cultural resources.

13. Impacts on the recreational use of the WSA.

14. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; BLM's Wilderness Inventory; the need for further inventories of resource values; and BLM's assessments of wilderness values, State in-holdings, relationships between big game and livestock, visual resources, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 36, for responses to specific comments about the Mt. Ellen-Blue Hills WSA.

### **DESCRIPTION OF THE ALTERNATIVES**

#### **Alternatives Considered and Eliminated from Detailed Study**

Alternatives that would add up to 46,624 acres of Federal and State lands on the west and northeast sides of the WSA were suggested in the public comments. These alternatives are not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B General Comment Response 3.1).

#### **Alternatives Analyzed**

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (81,726 acres); and (3) Partial Wilderness (Proposed Action) (65,804 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume IV are also applicable.



## MT. ELLEN-BLUE HILLS WSA

- No Action/No Wilderness Alternative

With this alternative, none of the 81,726-acre Mt. Ellen-Blue Hills WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Henry Mountain Management Framework Plan (MFP) (USDI, BLM, 1982c). The 5,944.9 acres (nine sections) of State land within the WSA (refer to Map 1) have not been identified in the MFP for Federal acquisition through exchange or purchase. State lands are analyzed as remaining under State ownership.

- Management Conditions and Constraints

All 81,726 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on 231 existing mining claims (4,620 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809). No oil and gas leases are located in the WSA. Future oil and gas leases could be developed under Category 1 (standard stipulations) on about 53,310 acres and Category 2 (special and standard stipulations) on about 28,416 acres. Although locatable mineral and oil and gas resources would be managed as described above, no locatable mineral or oil and gas exploration or development are projected for the WSA because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development assumptions. Approximately 2,825 acres of surface minable coal in the WSA could be made available for leasing in the future. It is assumed that in the long-term future about 60 million tons of coal could be recovered from 2,825 acres of Federal land on Wildcat Mesa. The surface mine would produce about 2 million tons of coal per year for a 30-year period. The project would employ about 200 workers, a maximum of an additional 175 acres would be required for all transportation systems including 5 miles of access roads and a 15-mile conveyor system which would be located in the WSA. The primary access to the WSA would come from a county road located 2.5 miles west of the WSA. Such a project would require approximately 187 acre-feet of water per year that would come from deep wells.

The present domestic livestock grazing use of 81,726 acres of the WSA would continue as authorized in the MFP (approximately 3,134 Animal Unit Months [AUMs]). The existing five spring developments, 1 mile of pipeline, six reservoirs, and 2.5 miles of fenceline could be used and maintained, and new rangeland developments could be implemented without wilderness considerations. One reservoir which would disturb approximately 1 acre is currently planned.

Developments for wildlife (including 1,000 acres of planned pinyon-juniper woodland chaining and seeding in the Dry Lakes/Nasty Flat area to provide an increase of 140 AUMs primarily for bison), watershed, and other resources would be allowed without concern for the wilderness resource.

Approximately 35,000 acres in the Blue Hills area would be closed to ORVs. The remaining 46,726 acres, as well as the approximately 9.3 miles of ways inside the WSA and 11 miles of roads that border the WSA, would remain available for vehicular use.

The approximately 22,171 acres of pinyon-juniper woodland would continue to be open to harvest of firewood and fenceposts. Even though there is a potential timber sale area in Sawmill Basin, no harvest would be allowed because the existing MFP recommends that no commercial forestry program be developed in Sawmill Basin. This is because the area's wildlife, scenic, and recreational values are more valuable than the timber resource.

The area would continue to be managed under VRM Class II on 63,935 acres, Class III on 2,454 acres, and Class IV on 15,337 acres.

The South Cainville Mesa (4,100 acres) and Gilbert Badlands (3,630 acres) would continue to be designated Areas of Critical Environmental Concern (ACECs) and would be managed to protect the biological and geological values and features found in these areas.






The Lonesome Beaver and Dandelion Flat Campgrounds would continue to be used for vehicle camping and would be maintained by mechanical means.

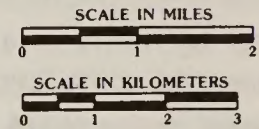


# MT. ELLEN-BLUE HILLS WSA

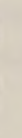
## Map 1 LAND STATUS Mt. Ellen-Blue Hills WSA UT-050-238

### Legend

-  WSA Boundary
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent WSA
-  South Caineville Mesa and Gilbert Badlands ACEC's Boundaries



ELEVATION EXPRESSED IN METERS



T. 29 S.

T. 30 S.

T. 31 S.

R. 8 E.

R. 9 E.

R. 10 E.



## MT. ELLEN-BLUE HILLS WSA

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment section, BLM projects that implementation of the No Action/No Wilderness Alternative would result in about 4,001 acres of surface disturbance in the foreseeable future. In the short term, about 1,000 acres of the assumed disturbance would result from a pinyon-juniper woodland chaining and seeding project in the Dry Lake/Nasty Flat area. The purpose of the chaining would be to improve wildlife habitat. One additional acre would be disturbed from the construction of a livestock reservoir. Over 3 months would be necessary to complete these projects. The chaining would be maintained, but not expanded over the foreseeable future to provide improved wildlife habitat. The reservoir would require only periodic maintenance. No locatable or leasable mineral or energy resource exploration or development would occur in the short term.

Surface mining of coal is projected for the long term. The following mining scenario could be expected for a 30-year mine life:

Surface mining of approximately 94 acres per year (2,825 acres total) producing about 2 million tons of coal per year.

Surface disturbance of an additional 175 acres for support facilities including 5 miles of access road and a 15-mile conveyor system within the WSA.

Two hundred workers would be required.

Maximum water use would be 187 acre-feet per year, which would be obtained from deep wells.

Overall, in the long term, up to 3,000 acres of surface disturbance due to coal mining is anticipated.

No disturbance from ORV use is projected because of present management restrictions and topographic constraints. Visitor use is expected to increase over the current estimated use of 800 visitor days per year at a rate of 2 to 7 percent annually. As much as 75 percent would involve vehicular access on existing access routes and future coal mining roads that would be developed.

- All Wilderness Alternative

With this alternative, all 81,726 acres of the Mt. Ellen-Blue Hills WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

It might be necessary to modify the southern boundary of the WSA slightly because of a road that was inadvertently constructed in trespass. The road affected naturalness on about 7 acres (refer to Naturalness in the Wilderness Values section).

The current policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. There are nine State sections (5,944.9 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

All 81,726 acres would be withdrawn from mineral location and closed to new mineral leasing (Category 4) and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 4,620 acres of 231 existing mining claims determined valid. These are primarily uranium claims. Development, should it occur, would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration for wilderness values. Oil and gas leases have been phased out and new leasing would not be allowed. None of the 2,825 acres of coal lands would be leased with this alternative.

Present domestic livestock grazing would be allowed to continue as authorized in the Henry Mountain MFP. The estimated 3,134 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of range-land developments existing at the time of designation (in this case, five spring developments, 1 mile of pipeline, six reservoirs, and 2.5 miles of fenceline) could continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that after designation the proposed new reservoir would not be allowed.



# MT. ELLEN-BLUE HILLS WSA

## Map 2 ALL WILDERNESS ALTERNATIVE Mt. Ellen-Blue Hills WSA UT-050-238

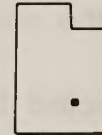
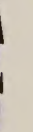
### Legend

- All Wilderness Alternative (81,726 acres)
- South Caineville Mesa and Gilbert Badlands ACEC's Boundaries

SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS



T. 29 S.

T. 30 S.

T. 31 S.

R. 8 E.

R. 9 E.

R. 10 E.



## MT. ELLEN-BLUE HILLS WSA

Wildlife habitat developments would be allowed after designation if compatible with wilderness values. It is assumed that 1,000 acres of proposed vegetation manipulation for wildlife in the Nasty Flat/Dry Lakes area would not be allowed because this could not be carried out consistent with wilderness protection criteria.

The entire 81,726-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions or for occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments or water facilities. About 9.3 miles of existing vehicular ways would not be available for vehicular use except as indicated above. A section of cherry-stemmed road near Blue Notch would remain open to vehicular use. About 11 miles (10 percent) of the WSA is bordered by gravel roads that would remain open to vehicular travel.

Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood for on-site use if accomplished by other than mechanical means. The present use of approximately 22,171 acres of pinyon-juniper woodland for harvest of fenceposts and firewood would no longer be allowed (demand has been minimal: under 60 cords and 200 posts per year). Also, the Ponderosa pine in Sawmill Basin would not be harvested.

Two developed campgrounds (Lonesome Beaver and Dandelion Flats) would have to be used and maintained by nonmechanical means.

Visual resources on 81,726 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

The South Cainville Mesa and Gilbert Badlands ACECs would be incorporated into the wilderness.

### • Action Scenario

BLM projects that no surface disturbance would occur. No mineral exploration or development is projected for existing leases or mining claims in the WSA. Implementation of the All Wilderness Alternative would preclude new mineral location and mineral leasing, therefore, no locatable or leasable mineral resource exploration or develop-

ment would occur following wilderness designation. The vegetation treatment planned for the Dry Lake/Nasty Flat area and the livestock reservoir would not be allowed. No other rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

No disturbance from ORV use is projected because of wilderness management restrictions and topographic constraints. Primitive recreational use is expected to increase over the current estimated use of 200 visitor days of primitive use per year at a rate of 2 to 7 percent annually. Motorized recreational use, currently estimated at about 600 visitor days, would not be allowed.

### • Partial Wilderness Alternative (Proposed Action) (65,804 Acres)

With this alternative, 65,804 acres of the Mt. Ellen-Blue Hills WSA would be designated as wilderness (refer to Map 3). The designated area would include about 50,840 acres in Wayne County and 14,964 acres in Garfield County. This alternative would avoid conflicts of wilderness designation with mineral values while analyzing as wilderness those portions of the WSA that have best wilderness values. Wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. The 65,804 acres analyzed as wilderness under this alternative include all the northern part and all of the southeastern part of the WSA. This generally includes the most rugged and mountainous portion of the WSA. The 15,922-acre area (west side) within the WSA, but outside of that designated as wilderness, would be managed in accordance with the current Henry Mountain MFP, as described for the No Action/No Wilderness Alternative. The 65,804-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative. It might be necessary to modify the southern boundary of the WSA slightly because of a road that was inadvertently constructed in trespass.

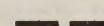
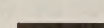
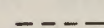
The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA. Based on this policy regarding



# MT. ELLEN-BLUE HILLS WSA

**Map 3**  
**PARTIAL WILDERNESS ALTERNATIVE**  
**Mt. Ellen-Blue Hills WSA**  
**UT-050-238**

## Legend

-  WSA Boundary
-  Partial Wilderness Alternative (65,804 acres)
-  South Caineville Mesa and Gilbert Badlands ACEC's Boundaries

SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS



T. 29 S.

T. 30 S.

T. 31 S.

R. 8 E.

R. 9 E.

R. 10 E.



## MT. ELLEN-BLUE HILLS WSA

exchange of State lands, and provisions of BLM Wilderness Management Guidelines regarding private lands, it is assumed that State lands would remain under existing ownership. There are seven State sections (4,798.9 acres) in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 65,804-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing (Category 4) and sale. In the 65,804-acre area, development work, extraction, and patenting would be allowed to continue on 4,380 acres of 219 existing mining claims, providing they are valid. Oil and gas leases have been phased out and new leasing would not be allowed. The 15,922-acre area not designated wilderness would be open to future mineral location, leasing, and sale. Development work, extraction, and patenting of 12 existing mining claims (240 acres) and future mining claims could occur in the 15,922-acre area if claims are valid. The area not designated would be managed as leasing Category 1 (standard stipulations) on 14,203 acres and Category 2 (standard and special stipulation) on 1,719 acres.

There are no existing oil and gas leases in the non-designated area. However, development of future leases could occur without concern for wilderness values. Although mineral resources would be managed as described above, no locatable mineral or oil and gas exploration or developments are projected in the WSA because the level of known resources and the probability of their development are too low to support that assumption. Appendix 6 in Volume I explains the mineral exploration and development projections.

It is projected that in the long-term future about 60 million tons of coal could be recovered from 2,825 acres of Federal land on Wildcat Mesa. The surface mine would produce about 2 million tons of coal per year for a 30-year period. The project would employ about 200 workers, a maximum of an additional 175 acres would be required for all transportation systems, including 5 miles of access roads, and a 15-mile conveyor system which would be located in the WSA. The primary access to the WSA would come from a county road located 2.5 miles west of the WSA. Such a project would require approximately 187 acre-

feet of water per year and would come from deep wells.

Domestic livestock grazing would continue to occur in the 65,804-acre wilderness area. The estimated 2,350 AUMs in the 65,804-acre area would remain available to livestock as presently allotted. No rangeland developments are proposed in this area. In the 15,922-acre nonwilderness area, grazing use would continue as authorized in the MFP (approximately 784 AUMs). A new reservoir would be installed in this area without concern for wilderness values.

Planned wildlife developments in the 65,804-acre area include 1,000 acres of vegetation treatment in the vicinity of Nasty Flat/Dry Lakes. It is assumed that the 1,000-acre vegetation manipulation would not be allowed.

The mountains and badlands that would comprise the 65,804-acre wilderness would be closed to ORV use. About 4 miles of existing ways would not be available for vehicular use except in situations described under the All Wilderness Alternative. All of the 15,922 acres not designated wilderness in the WSA would be open to ORV use. The 5.3 miles of ways in this area would be available for use, as would a road near Blue Notch.

Harvesting of forest products in the 65,804 acres of wilderness would not be allowed except for harvesting of pine nuts or noncommercial gathering of dead-and-down wood for on-site use, if accomplished by other than mechanical means. The remaining 15,922 acres would be open for harvesting of woodland products, although demand is expected to remain low.

Two developed campgrounds (Lonesome Beaver and Dandelion Flats) would continue to be maintained by mechanical means.

Visual resources on the 65,804-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 15,922 acres would be managed as VRM Class II on 4,275 acres, Class III on 954 acres, and Class IV on 10,693 acres.

The South Cainville Mesa and Gilbert Badlands ACECs would be incorporated into the wilderness area.



# MT. ELLEN-BLUE HILLS WSA

- Action Scenario

A total of 3,001 acres of surface disturbance is expected with this alternative over the foreseeable future.

BLM projects that no surface disturbance would occur in the designated portion of the WSA. It is assumed that existing mining claims and mineral leases would not be developed. New mineral location and mineral leasing would be precluded. Therefore, no mineral resource exploration or development would occur. The planned vegetation treatment in the Dry Lake/Nasty Flat area would not be allowed. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

One acre of disturbance is projected in the short term for the nondesignated portion of the WSA resulting from construction of the livestock reservoir. No locatable or leasable mineral resource exploration or development is projected in the short term.

Surface mining of coal may be anticipated in the long term in the nondesignated portion. The following mining scenario could be expected for a 30-year mine life:

Surface mining of approximately 94 acres per year (2,825 acres total) producing about 2 million tons of coal per year.

Surface disturbance of an additional 175 acres for support facilities including 5 miles of access road and a 15-mile conveyor system within the WSA.

Two hundred workers would be required.

Maximum water use would be 187 acre-feet per year.

In the long term, up to 3,000 acres of surface disturbance due to coal mining is anticipated.

No disturbance from ORV use is projected because of wilderness management restrictions and topographic constraints. Primitive recreational use is expected to increase over the current estimated primitive use of 200 visitor days per year at a rate of 2 to 7 percent annually. Initially, vehicular use, currently estimated at about 600 visitor

days annually, would decline slightly but would then increase at a rate of 2 to 7 percent annually.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives section in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

- Size

This WSA is 81,726 acres in size. It is about 19 miles long (north to south) and about 16 miles wide at its widest point. Immediately adjacent to the east is the 13,620-acre Bull Mountain WSA. The graded Sawmill Basin Road, a secondary travel route in the Henry Mountains, separates the two WSAs.

- Naturalness

Most of the WSA is in a completely natural condition. Imprints of man include 9.3 miles of ways, five springs, 1 mile of pipeline, 2.5 miles of fence, and six livestock reservoirs; and the Lonesome Beaver and Dandelion Flat Campgrounds which were inadvertently included within the boundary of the WSA due to a drafting error.

In August 1982, approximately 4,000 linear feet of an existing way was upgraded and approximately 3.2 acres cleared for an oil and gas exploratory drilling operation. The well did not produce and the drill rig was removed and all disturbed acreage rehabilitated in March 1983.

A road along the North Summit Ridge on the southern boundary of the WSA was constructed in the fall of 1983 by the Tercero Corporation and was intended to be constructed entirely on private lands owned by them



MT. ELLEN-BLUE HILLS WSA

Table 1  
Summary of Environmental Consequences

Resource		Alternatives	
No Action/No Wilderness		All Wilderness (81,726 Acres) (Proposed Action)	Partial Wilderness (65,804 Acres)
Impacts on Wilderness Values	Wilderness values would not be preserved by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on about 4,001 acres of the WSA because of rangeland development projects and coal mining. Opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 12,260 acres. Most special features including geologic features, endangered and sensitive species, bristlecone pine, and shark teeth would not be significantly affected. Class A scenery would be reduced in quality in the disturbed areas. Bison would benefit from the increased forage. Increased vehicular use of 9.3 miles of ways and future coal roads would be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA. There would be no conflicts with continued mechanized management and vehicular use of the Lonesome Beaver and Dandelion Flat Campgrounds.	Wilderness designation would preserve wilderness values including naturalness, outstanding opportunities for solitude and primitive recreation and special features. No disturbance is anticipated in the foreseeable future that would affect wilderness values. The bison special feature would not provide additional forage with this alternative. Increased visitor use would be primitive in nature and would be managed so as to not result in loss of wilderness values. Management of the Lonesome Beaver and Dandelion Flat Campgrounds as wilderness would present management conflicts.	Wilderness values would be preserved in the designated area which is approximately 83 percent of the WSA. The best wilderness values would be preserved. In the nondesignated area, naturalness and opportunities for solitude and primitive recreation would be directly lost on about 3,001 acres because of coal mining and reservoir construction. Opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 7,896 acres of the WSA. All of the impact would be in the nondesignated area. Although the bison special feature would benefit from solitude, there would be no additional forage with this alternative. Vehicular use of 5.3 miles of ways and 5 miles of future coal haul roads in the nondesignated portion would be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA. The Lonesome Beaver and Dandelion Flat Campgrounds would be in the nondesignated area and management conflicts would not occur.
	Impacts on Air Quality	Existing PSD Class II air quality standards in the WSA or PSD Class I air quality standards in Capitol Reef National Park would be maintained but slight increases in fugitive dust could be expected.	Impacts on air quality would be essentially the same as with the No Action/No Wilderness Alternative since all of the potential coal surface mining would occur in the nondesignated area.
	Impacts on Geology and Topography	Topography would be modified by surface mining on 2,825 acres or about 3 percent of the WSA.	Impacts and conclusions would be the same as for the No Action/No Wilderness Alternative since the coal mining area would be in the nondesignated portion of the WSA.



# MT. ELLEN-BLUE HILLS WSA

Table 1 (Continued)  
Summary of Environmental Consequences

		Alternatives	
		All Wilderness (81,726 Acres) (Proposed Action)	Partial Wilderness (65,804 Acres)
Resource	No Action/No Wilderness		
Impacts on Soils	Over the long term, soil loss would increase about 7 percent or a maximum of 8,100 cubic yards per year with an unquantified but slight increase in salt production. However, soil loss and salt production would decrease as reclamation occurred.	Soil erosion would remain at present levels. However, the opportunity to reduce soil loss on 1,000 acres would be foregone.	About 3,000 acres of soil would be disturbed as compared to 4,000 acres with the No Action/No Wilderness Alternative. Most of this difference would be because the 1,000 acres of proposed vegetation treatments would not be allowed in the 65,804-acre area. Therefore, soil loss from coal development would be the same as with the No Action/No Wilderness Alternative. About 5,100 more cubic yards of soil per year would be lost than with the All Wilderness Alternative. This would be about a 5-percent increase over present conditions.
Impacts on Vegetation	Threatened, endangered, or sensitive plant species would not be significantly affected because the viability of populations would be maintained. The 4,000 acres of projected surface disturbance would affect 18 percent of the pinyon-juniper woodland in the WSA. However, 3,000 acres would be reclaimed to a natural condition and vegetation types would not be significantly altered.	Vegetation types and endangered and sensitive plant species would be protected by the All Wilderness Alternative.	Impacts would be similar to those of the No Action/No Wilderness Alternative. About 3,000 acres or 13.5 percent of pinyon-juniper woodland in the WSA would be disturbed and then reclaimed to a natural condition.
Impacts on Water Resources	Surface coal mining in the Wildcat Mesa area could result in slight increases in total dissolved solids and other pollution but mine plan restrictions would reduce or eliminate such impacts. Up to 187 acre-feet of groundwater per year could be used in coal mining.	Wilderness designation would not alter present or future water quality. A proposed livestock reservoir could not be built.	Surface coal mining in the Wildcat Mesa area could potentially result in slight increases in total dissolved solids and other pollution, but mine plan restrictions would reduce or eliminate such impacts. Up to 187 acre-feet of groundwater per year could be used with coal mining. A proposed livestock reservoir would be allowed.



# MT. ELLEN-BLUE HILLS WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives	
	No Action/No Wilderness	Partial Wilderness (65,804 Acres)
Impacts on Mineral and Energy Exploration and Production	Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral and energy resource exploration and production in this WSA.	Implementation of the Partial Wilderness Alternative would not have a significant adverse effect on mineral and energy resource exploration and production because the coal resource in the WSA would be in the non-designated area and could be developed in the future.
	Wilderness designation would limit potential exploration and development opportunities for coal resources known to occur in the WSA. Opportunities for production of up to 60 million tons of coal would be foregone. No significant locatable or salable mineral production would be foregone.	
Impacts on Wildlife Habitat and Populations	Impacts on wildlife habitat and populations of threatened, endangered or other special status animal species would not be significant. Implementation of the rangeland and water projects would benefit wildlife by providing additional water, 140 AUMs and forage ecotones. Wildlife species would be destroyed or displaced by coal mining on 4 percent (3,000 acres) of the WSA.	Impacts on habitat and populations of threatened, endangered, or other special status animal species would not be significant. Wildlife species would be destroyed or displaced on 4 percent (3,000 acres) of the WSA during the 30-year life of the projected surface mines.
	Wilderness designation would preclude 1,000 acres of wildlife improvement projects, but would prevent habitat destruction and provide all species with additional opportunities for solitude.	
Impacts on Forest Resources	This alternative would not result in any significant increase in harvest or loss of forest resources in the WSA because access to firewood and fenceposts would not be restricted.	No significant impacts to forest resources would be expected from this alternative because past use has been light and firewood and fenceposts are readily available outside the WSA.
	Private harvest of the pinyon-juniper woodland for small amounts of firewood and fenceposts would be precluded. Past use has been light (160 cords of firewood and 200 fenceposts per year). This impact is not significant because of availability of firewood and fenceposts outside the WSA.	
Impacts on Livestock Management	Strip mining for coal would disrupt livestock grazing during the life of the project. However, livestock forage would increase over the long term with this alternative. A proposed reservoir could be constructed to improve livestock distribution.	This alternative would impact access for livestock management on approximately the same as the All Wilderness Alternative. In addition strip mining for coal would disrupt livestock grazing as described for the No Action/No Wilderness Alternative. The proposed reservoir would not be allowed to improve livestock distribution.
	Restrictions on access to 9.3 miles of ways would not significantly affect livestock management because 3.5 miles of roads would be cherry-stemmed and would remain available for unrestricted access and because there is very little use of vehicles for livestock management.	



# MT. ELLEN-BLUE HILLS WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives			
Resource	No Action/No Wilderness	All Wilderness (81,726 Acres) (Proposed Action)	Partial Wilderness (65,804 Acres)
Impacts on Visual Resources	Significant visual impacts would occur on 5 percent (4,001 acres) of the WSA and in areas surrounding the disturbed lands.	Visual resources would be preserved. There would be no change to the visual resources within the WSA as a result of this alternative because there would not be any surface disturbance.	Impacts on visual resources would be significant in disturbed areas. Approximately 3,000 acres or 4 percent of the WSA as well as surrounding areas would be affected by disturbance.
Impacts on Cultural Resources	Significant impacts on cultural resources would not occur with this alternative because of low site densities in the WSA and mitigation required by law.	The overall impact of wilderness designation on cultural resources would be positive because surface disturbance and ORV use would be prevented.	Impacts would be similar to those of the No Action/No Wilderness Alternative because surface mining for coal would occur. Overall, cultural resources would not be significantly affected.
Impacts on Recreation	Primitive recreation opportunities would be reduced in quality or lost on 1,000 acres of pinyon-juniper chaining in the short term and 3,000 acres due to surface coal mining in the long term. Both motorized and primitive recreation use would increase. Two developed campgrounds would continue to be used and maintained by motorized and mechanized means. Service and use of the campgrounds would not be affected.	This alternative would benefit primitive recreation by eliminating surface-disturbing activities and increasing management attention and recognition of primitive recreational values. ORV use on 9.3 miles of ways would be precluded. Mechanized maintenance of Lonesome Beaver and Dandelion Flat Campgrounds would be eliminated which would create administrative problems and disrupt historical recreation use of the area.	Primitive recreational opportunities would be protected on approximately 80 percent of the WSA. Primitive recreation opportunities would be reduced in quality or lost on 3,000 acres due to surface coal mining over the long term. Motorized recreation opportunities would continue in the nondesignated area involving 5.3 miles of vehicular ways. Lonesome Beaver and Dandelion Flat Campgrounds would not be in the designated area and use and service would continue as at present.
Impacts on Economic Conditions	Short-term economic conditions would not be affected. Long-term conditions would be affected by an increase of about 200 workers. This would represent an approximate 5-percent increase in the projected work force in Wayne and Garfield Counties. This would result in significant beneficial and adverse impacts on local economic conditions.	Over the short term, wilderness designation would not affect local economic conditions. However, there would be significant beneficial and adverse impacts to long-term economic conditions because coal mining in the Wildcat Mesa and 200 potential jobs would be foregone.	Over the short term, this alternative would not affect local economic conditions. Long-term impacts would be about the same as with the No Action/No Wilderness Alternative because coal development could occur.



## MT. ELLEN-BLUE HILLS WSA

and the Durfey families. After the road had been centerline staked and constructed, a final survey was ordered by the private landowners. It was discovered, at that time, that the road had inadvertently trespassed on BLM lands. BLM specialists made an on-site inspection and determined that the road actually crossed over the boundary line of the Mt. Ellen-Blue Hills WSA in four locations and disturbed naturalness on less than 2 acres. The road also cut off less than 5 acres from the main WSA. The Tercero Corporation has made restitution and has relinquished 166 livestock AUMs for use by bison as compensation for the trespass. The trespass could be resolved by any means the BLM deems necessary to be in compliance with the intent of BLM's Interim Management Policy (USDI, BLM, 1979) and to make necessary corrections to minimize the construction impacts in the area. BLM specialists have determined that it would be very difficult to completely restore naturalness due to the nature of the hillside on which the road is located.

In 1984 approximately 167 acres of pinyon-juniper woodland (T. 31 S., 12. E., sec. 23) was mistakenly chained and seeded because of a project mapping error. The chaining is being rehabilitated to meet naturalness criteria.

In the WSA as a whole, 80,116 acres are judged to meet the naturalness standard set by the Wilderness Act and 1,610 acres do not meet the standard.

- Solitude

Opportunities for solitude (i.e., a secluded spot away from others) in the WSA are influenced by size, topography, vegetation, and absence of distracting sights and sounds. The WSA's size (81,726 acres) allows for recreationists to find solitude in much of the area. About 73 percent (60,000 acres) of the Mt. Ellen-Blue Hills WSA displays outstanding opportunities for solitude.

Mt. Ellen has several large basins and ridges such as Horseshoe Basin, Dry Lakes, and Deer Haven that provide separation and screening. Vegetation on Mt. Ellen also contributes to opportunities for solitude. Pinyon-juniper, aspen, Ponderosa pine, and Douglas fir provide screening where found in the WSA. Mt. Ellen is the highest peak in the Henry Mountains and offers excellent vistas of central Utah from the summit. The Blue Hills region of the WSA is an extensive network of badlands and ridges that provides excellent topographic screening but no vegetation screening.

In the western part of the WSA the countryside is sparsely vegetated, open, and relatively flat in numerous locations; therefore, opportunities for solitude in this area are judged to be less than outstanding.

- Primitive and Unconfined Recreation

About 45 percent (37,000 acres) of the WSA possesses outstanding opportunities for primitive, unconfined recreation. These outstanding opportunities are located primarily in the southeastern part of the WSA. Opportunities for primitive, unconfined recreation exist in the other 55 percent (44,726 acres) but are considered of relatively low quality and less than outstanding for recreation use due to the barren and/or somewhat flat nature of the terrain.

Opportunities for primitive and unconfined recreation were assessed by considering miles of potential hiking routes in relation to the WSA's size, the number of recreational opportunities present, and evaluating the quality of these opportunities.

The WSA has a diversity of recreational opportunities. Eight of these activities are above average or excellent in quality in part of the WSA. They include backpacking, camping, dayhiking, nature study, photography, geological and general sightseeing, and wildlife observation.

- Special Features

This WSA contains an outstanding selection of special features. They include those of a geological, scientific, educational, scenic, botanical, ecological, and zoological interest.

Mt. Ellen is the highest peak in the Henry Mountains, the last named and explored major mountain range in the continental U.S. The higher elevations of Mt. Ellen offer outstanding vistas of the geology of central Utah and the entire Waterpocket Fold.

Portions of Mt. Ellen serve as a summer range for the free-roaming Henry Mountain bison herd. The isolated, rugged terrain also serves as habitat for cougar which is a wildlife species associated with wilderness.

Bristlecone pine was discovered in the WSA in 1973. The Henry Mountains are considered the southeast limit for the Great Basin variety of bristlecone pine in the United States.



## MT. ELLEN-BLUE HILLS WSA

Of scientific and ecologic interest are the four distinct life zones found in this WSA the Upper Sonoran, Transition, Canadian, and Hudsonian life zones.

Mancos Shale badlands at the lower elevations contain fossilized shark teeth. The badlands are also of interest to the science of geomorphology; this area has a history of scientific research dating from 1875 to the present.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) and one plant species Sclerocactus wrightiae listed as endangered or threatened which may occur in the WSA. Six animal species and three plant species that are considered sensitive may also occur there. Approximately 77 percent (63,307 acres) of the WSA is rated Class A for scenic quality. It has approximately 23 miles of perennial streams.

### • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland, saltbush-greasewood, Arizona pine forest, and spruce-fir-Douglas fir forest. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. To see how the ecoregion and PNV types represented by this WSA compare Statewide and nationally with existing and potential National Wilderness Preservation Units, refer to the Wilderness Values section in Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah; and Provo-Orem, Utah.

### Air Quality

The Mt. Ellen-Blue Hills WSA is designated as a PSD Class II area under the provisions of the Clean Air Act as amended. Nearby Class I areas are Capitol Reef National Park, 7 miles west of the WSA, and Canyonlands National Park, 32 miles east of the WSA. Air quality and visibility in the WSA are generally very good to excellent.

Visibility is an extremely important value to the Mt. Ellen-Blue Hills WSA. A panorama of dissected canyon country and mountain ranges unfolds in all directions from the summit of Mt. Ellen. These vistas are especially valuable because they are viewed from near

the center of the area with the highest average visual range (70+ miles) in the United States (EPA, 1979).

### Geology and Topography

The Mt. Ellen-Blue Hills WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. In general, this province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments. The study area is located in and adjacent to the northern flank of the Henry Basin. The Mt. Ellen stock is located south of the WSA, although the actual summit is within the WSA.

Mt. Ellen is the northernmost and highest of the five peaks that form the Henry Mountains. The mountains were formed when mid-Tertiary diorite porphyry stocks and laccoliths were injected into the overlying sedimentary rocks (Hunt, 1953). The intrusion centers (structural domes) are bordered by an irregular zone of shattered sedimentary rock. The sedimentary rocks range in age from late Triassic to late Cretaceous.

Superposed on Mt. Ellen are smaller anticlinal crenulations that reflect the presence of individual, underlying laccoliths that were intruded radically from the stock into the adjacent sedimentary rocks. Several thousand feet of sedimentary rocks were domed and faulted during their emplacement.

Elevations in the Mt. Ellen-Blue Hills WSA range from 4,600 to 11,615 feet. The WSA is characterized by two distinct topographic types. The Blue Hills portion consists of mesas and badland topography with drainages carved into the Mancos Formation; the Mt. Ellen portion consists of steep slopes and rounded peaks broken by large basins and wide canyons.

The Mancos Shale badlands along Sweetwater Creek are of major interest to the science of geomorphology. They have a history of scientific studies dating from 1875 to the present.

### Soils

Soils range from high mountain types (stony and gravelly loams) on Mt. Ellen to the blue clay badlands on the desert at 4,800 feet. Lower elevations consist of desert shales, stony loams, sands, alkali flats, and rocky badlands. Slopes range from 2 percent to vertical cliffs. This WSA has some of the most severe erosion problems in the Henry Mountain Resource Area, primarily on the northern foothills of Mt. Ellen. Table



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2 summarizes soil erosion in the WSA. Erosion condition was determined using soil surface factors.

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	6,000	7	32,400
Critical	2.7	2,810	3	7,587
Moderate	1.3	29,760	37	38,688
Slight	0.6	35,086	43	21,052
Stable	0.3	4,090	5	1,227
Unclassified		<u>3,980</u>	<u>5</u>	<u>0</u>
Total		81,726	100	100,954

Sources: USDI, BLM, 1982c; Leifeste, 1978.

According to an unpublished soil survey conducted by the SCS, approximately 70 percent of the soils in the WSA are classified as moderately saline and the remaining 30 percent (located in the southeastern portion of the WSA) are classified as nonsaline. The average annual salt production from all soils in the WSA is estimated to be 148 lb per acre.

Seeding potential in the Mt. Ellen-Blue Hills WSA is restricted because of low precipitation, rocks, moderate salinity concentrations, and steep slopes. However, there are scattered tracts in the southern portion of the WSA which have a moderate or better seeding potential.

## Vegetation Including Special Status Species

The northern part of the WSA consists of Blue-Hills badland terrain with little vegetation. In the remainder of the WSA, the predominant vegetation on lower elevations is pinyon-juniper woodland and saltbush. At higher elevations, vegetation includes Ponderosa pine, Douglas fir, subalpine fir, aspen, and alpine grasslands. Existing vegetation types are summarized in Table 3.

Bristlecone pine was discovered in the WSA in 1973. The Henry Mountains are now considered to be the southeast limit for the Great Basin variety of bristlecone pine. The WSA contains portions of four biological life zones (Upper Sonoran, Transition, Canadian, and Hudsonian).

One endangered species, Sclerocactus wrightiae, may occur in the WSA. One Category 1 candidate species and two Category 2 candidate species may also occur

in the WSA. These are Pediocactus winkleri (which may be proposed for listing in the near future by FWS), Eriogonum cronquistii, and Spiranthes diluvialis (see Appendix 4 in Volume I).

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Shrubs, grasses, forbs	33,260	41
Rock outcrops, badlands	20,453	25
Pinyon-juniper woodland	22,171	27
Coniferous Forest/Aspen	4,680	6
Gambel's oak	<u>1,162</u>	<u>1</u>
Total	81,726	100

Source: USDI, BLM, 1983b.

The Mt. Ellen-Blue Hills WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 4.

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Spruce, fir, Douglas fir	2,000	2
Arizona pine forest	7,172	9
Juniper-pinyon woodland	41,314	51
Saltbush-greasewood	<u>31,240</u>	<u>38</u>
Total	81,726	100

Source: USDI, USGS, 1978.

## Water Resources

The Mt. Ellen-Blue Hills WSA lies within the Fremont River subbasin of the Upper Colorado River hydrologic subregion.

The WSA contains the headwaters for several important streams, which are tributaries to the Fremont River, including Bull, Dugout, Oak, Birch, Sandy, and South Creeks. The WSA is the recharge recovery area for many springs in the deserts to the east and west. There are approximately 20 springs, two seeps, and 23 miles of perennial streams in the WSA. The water quality standards for Fremont River and tributaries, from confluence with Muddy Creek to Capitol Reef National Park are as follows: Class 3C (protected for nongame fish and other aquatic life)



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and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

Utah's 1986 305(b) Water Quality Assessment Report shows the Fremont River to have water quality problems such as total dissolved solids (TDS) and sodium from probable source categories of natural sources, agriculture irrigated cropland, and grazing. The Fremont River below Capitol Reef National Monument often exceeds the TDS standards for agriculture use. Spring water and headwater streams are generally of good quality, but surface water at lower elevations is of lesser quality. All are used by wildlife and livestock. This WSA is within Water Rights Adjudication Area 95. The 95 area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit (UDNRE, DWR, 1988). Applications are not being approved within municipalities, but subdivision and some locations above valleys may be approved. The streams are used for irrigation except Oak Creek and Birch Creek. Birch Creek is proposed for irrigation use. Wayne County is investigating the feasibility of constructing a dam for irrigation storage and flood control purposes on the Fremont River to the north of the WSA, but specific location studies recently have determined that the proposed project would be outside of the WSA.

In the WSA there is little potential for wells or underground water use. Underground water sources are generally saline and not acceptable for human use.

### Mineral and Energy Resources

The energy and mineral resource rating summary for the Mt. Ellen-Blue Hills WSA is given in Table 5. Appendix 5 in Volume I explains the mineral and energy rating system.

The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would occur in only small amounts in the WSA.

#### • Leasable Minerals

There are no known deposits of any leasable minerals except coal in the WSA, nor are there any active drill-

ing, mining, or exploration activities for any leasable minerals.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c2	Less than 500 metric tons of uranium oxide
Coal	f2	c4	Less than 163 million metric tons
Gold	f2	c1	Less than 25 metric tons
Silver	f2	c1	Less than 500 metric tons
Copper	f2	c1	Less than 50,000 metric tons of contained copper

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

#### • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin, which has oil and gas production established to the east; the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them; the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and the lack of any oil and gas production established from any oil and gas wells drilled in the area. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic feet of gas.

The WSA is rated as having a low potential for hydrocarbon accumulations due to the presence of the intrusive bodies within the WSA (Molenaar, et al., 1983). It is also indicated, however, that even though the intrusive bodies are present, hydrocarbons may exist near the intrusions due to the limited metamorphism associated with them (SAI, 1982). If the Kaibab limestone was the source for oil accumulations in the oil



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impregnated rock deposits within the Tar Sand Triangle, hydrocarbons could exist in the vicinity of the WSA in various structural and stratigraphic traps (USDI, USBM, 1984a).

The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. A few miles east of the WSA, the sedimentary facies within Pennsylvanian strata changes from an anhydride and basinal shale to carbonate facies. The WSA is located to the west of this facies change in an area where stratigraphic traps could have formed on the carbonate shelf. If this is the case, small stratigraphic traps could have formed in Pennsylvanian age rocks in the vicinity of the WSA. Stratigraphic traps of this nature are difficult to locate in this region, but when traps of this type are found, they may be expected to contain 3 to 5 million barrels of oil each and average 40 to 80 acres in size.

Very few oil and gas exploration wells have been drilled within or near the WSA. Between August and November of 1982, Exxon constructed approximately 4,000 feet of road and a 3.2-acre drill pad, and drilled an exploratory oil and gas well in the western part of the WSA. This well penetrated Mississippian strata with no shows of oil or gas. It has since been plugged and abandoned, and reclamation is occurring. Other wells in the area have penetrated upper Permian rocks with no oil or gas reported. Based on the available information, the certainty of occurrence for oil and gas is low (c2).

Under the current land use plan, 53,310 acres are in Category 1 (standard stipulations) and 28,416 acres are in Category 2 (special stipulations). There are no existing oil and gas leases in the WSA.

### • Coal

Coal in the region is found in the Henry Mountains coal field, which has total coal reserves (measured, inferred, and potential) of 542.5 million short tons (USDI, USGS, 1979). The field has an estimated 230.9 million short tons of minable coal and is comprised of three zones, described as follows (Doelling and Graham, 1972):

**Emery Coal Zone:** (187.4 million short tons minable) this coal bed is present in the central part of

the coal basin and represents the dominant seam in the Henry Mountain coal field.

**Ferron Coal Zone:** (42.0 million short tons minable) developed in Factory Butte, Swap Mesa, and Stanton Mine areas (southeast end of coal field). Minal thickness occurs mostly in the Factory Butte area and a small area at the south end of the coal field.

**Dakota Coal Zone:** (1.5 million short tons minable) usually thin or missing throughout the coal field. This coal bed thickens in small areas (0.25 mile) and has been noted along North Caineville Reef, Waterpocket Fold, and around some of the peaks in the mountain range.

About 30 percent of the Henry Mountain coal field is included in the western part of the WSA, however much of this area is underlain by the Ferron Coal Zone which contains seams of insufficient thickness to be commercially minable. Although about 60 percent of the WSA overlaps the coal field, only an estimated 2,825 acres of the WSA in the Wildcat Mesa area are considered feasible for surface mining. Based on drilling and exploration activities, it is estimated that 48 to 60 million tons of recoverable coal occur in this area. This tract was rated as (f4/c4) for coal, based on the known deposits in this area (SAI, 1982).

For the remainder of the tract, estimates are based on limited exploration data, and any other coal deposits in the WSA are believed to be thin and split into numerous small seams. In the past, limited quantities of coal have been mined from three locations; Dugout Creek (about 1 mile south of the WSA), Sweetwater Creek (about 5 miles south of the WSA), and Factory Butte (about 10 miles north of the WSA).

Based on existing information and the thin, discontinuous nature of the coal seams under most of the WSA, the overall rating for the tract for coal is (f2/c4). Coal prospecting permits and lease applications formerly existing in and adjacent to the WSA have been relinquished. Presently, no leases or coal-related activities occur in the WSA.



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- Locatable Minerals

There are no known deposits of locatable minerals in the WSA. However, there are approximately 231 mining claims covering 4,620 acres.

- Uranium

Uranium has been produced primarily from the Henry Mountains mineral belt which lies a few miles east of the WSA. Uranium deposits within the mineral belt are small, averaging 80 tons of mineralized rock each (SAI, 1982). Most uranium potential within the belt is assigned to the Salt Wash Member of the Morrison Formation. This formation is exposed only in the northeastern portion of the WSA, but underlies the majority of the tract. Even though the WSA does contain this member, it is not thought to be favorable for uranium mineralization in the WSA due to the location of the WSA outside of the identified paleostream channel and the lack of known carbonaceous lacustrine mudstone strata in the area. In addition, there are no known significant uranium anomalies in the study area (USDI, USGS, 1985a). Where uranium is known to occur in the Salt Wash Member in the vicinity of the WSA, the deposits tend to be small and discontinuous.

Due to the fact that the Salt Wash Member is present within the WSA and uranium mines and prospects occur within a few miles of the tract, it is possible that small deposits underlie the WSA (less than 500 metric tons of uranium oxide [f2]). The certainty that the uranium is present is low (c2), due to the lack of detected anomalies, the lack of uranium mines and prospects, and the discontinuous nature of uranium deposits in the vicinity.

- Gold, Silver, and Copper

The WSA was rated the as (f2/c3) for gold, silver, and copper resources (SAI, 1982). This rating is based primarily on the presence of mineralized vein and fissure deposits within the intrusive rocks and shatter zones in Bromide Basin, which lies about 1 mile south of the WSA. Approximately 700 oz of gold, 3,000 oz of silver, and 9 tons of copper have been mined from the area since 1889 (USDI, USBM, 1984), and the small near-surface deposits are thought to have been mined out (SAI, 1982). The mineralized vein structures strike toward the WSA, but no mineralized veins

similar to those in Bromide Basin have been found in the WSA (USDI, USGS, 1985c; USDI, USBM, 1984). Gold was not detected in any of the six panned concentrate samples taken from the drainages in the WSA (USDI, USBM, 1984). Surrounding the intrusive stock is a shatter zone, which may have associated mineralization at depth within the WSA.

Due to the relatively small production of gold, silver, and copper from the Bromide Basin area, the WSA is rated as having a potential for small deposits of these materials (f2). The certainty that these metals exist has been lowered to a (c2) due to the lack of Bromide Basin structures extending into the WSA, the lack of anomalous values being detected in samples taken inside the WSA, and the lack of known mineralized areas within the WSA.

- Salable Minerals

With the exception of building stone, sand, and gravel, there are no known or possible occurrences of salable minerals. Building stone, sand, and gravel resources are associated with the aggregate material on Mt. Ellen. These deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

### Wildlife Including Special Status Species

Game animals in the WSA include mule deer, bison, pronghorn antelope, elk, cougar, coyote, cottontail, chukar partridge, doves, and band-tailed pigeon. Many furbearers and other small mammals and birds inhabit the WSA. No wildlife transplants are planned for this WSA.

There are no existing wildlife habitat improvement facilities in the WSA. However, 1,000 acres of habitat improvement through pinyon-juniper woodland chaining and seeding has been planned for the Dry Lakes/Nasty Flat area. This would produce an estimated 140 AUMs for big game, primarily for bison and deer.

Big game ranges are identified in Table 6. The current deer population on crucial summer range in the WSA is estimated as 113 animals. It is estimated that 52 bison use crucial summer and yearlong ranges in the WSA (USDI, BLM, 1983b). Overgrazing and competition for forage between big game and livestock is currently a problem on the summer ranges.



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Two endangered wildlife species, the peregrine falcon and the bald eagle, may occur in the WSA. In addition, six Category 2 candidate species may occur in the WSA. These include the Tanner's black camel cricket, Mt. Ellen chipmunk, Great Basin Silverspot butterfly, Mt. Ellen pocket gopher, ferruginous hawk, and white-faced ibis (see Appendix 4 in Volume I).

Table 6  
Big Game Ranges

Range	Acres
Crucial deer winter	10,500
Crucial deer summer	9,500
Crucial bison summer	13,000
Crucial bison winter	600
Crucial bison yearlong	6,500

Source: USDI, BLM, 1982c.

## Forest Resources

The 22,171 acres of pinyon-juniper woodland in the WSA is open to harvest of fenceposts and firewood. Demand for this resource has been minimal (under 60 cords of firewood and 200 fenceposts per year).

More than half of the 1,565 acres of aspen in the WSA is located on slopes exceeding 40 percent and, therefore, is not harvestable (USDI, BLM, 1986). Most of the other aspen currently is inaccessible.

About 70 percent of the 750 acres of Douglas fir also is on steep slopes and economically unrecoverable.

A potentially harvestable Ponderosa pine area is found in Sawmill Basin; however, volumes are low. Because this area also has wildlife, scenic, and recreation values and timber demand is low, the Henry Mountains MFP does not allow for commercial harvests in Sawmill Basin. Bristlecone pine trees are found on Mt. Ellen.

## Livestock and Wild Horses/Burros

Livestock information is summarized in Table 7. Portions of four allotments used by 18 operators involving 2,173 cattle are permitted for an estimated 3,134 AUMs in the WSA. This represents 20 percent of the total AUMs in the four allotments involved. Two allotments, Dry Lakes and Sawmill Basin, are not grazed by livestock but are now set aside for wildlife.

Most of the livestock herding, salting, roundup, and general livestock management is accomplished on horseback. However, ways onto Thompson Mesa and in the Lost Spring area are used to check livestock and to obtain condition and trend information.

The WSA has five spring developments, six reservoirs, 1 mile of pipeline, and 2.5 miles of fence. One new livestock reservoir is planned for livestock use.

Table 7  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Blue Bench	87,926	48,361	4,598	2,288	635 Cattle	11/01-05/31	6
Dry Lakes	9,527	9,527	Unalloted				
Sawmill Basin	9,247	4,387	Unalloted				
Nasty Flat	13,851	3,415	482	103	126 Cattle	06/01-09/30	2
Hanksville	79,759	2,482	6,000	19	670 Cattle	11/01-05/31	7
Steele Butte	74,132	13,554	5,034	724	742 Cattle	10/16-05/31	3
Total	274,442	81,726	16,114	3,134			18

Sources: BLM File Data.



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Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Mt. Ellen-Blue Hills WSA (USDA, APHIS, 1988).

There are no wild horses or burros inhabiting this WSA.

### Visual Resources

This WSA has three visually distinctive areas: Blue Hills, Mt. Ellen, and the mesas along the western border. The Blue Hills are Mancos Shale badlands with barren, sharply eroded ridges of blue-gray color in the northeastern part of the WSA. The southeastern part of the WSA consists of foothills and the main peak of Mt. Ellen. Scenic values are exceptional in both sections.

The Mt. Ellen-Blue Hills WSA is visible from Utah Highways 24 and 95 and from the Sawmill Basin road (a secondary travel route in the Henry Mountains). The three mesas in the WSA (South Caineville Mesa, Thompson Mesa, and Wildcat Mesa) are steep-sided and flat-topped formations typical of the general region.

The BLM Visual Resource Evaluation and VRM Class ratings for the WSA are shown in Table 8. The BLM VRM system is explained in Appendix 7 in Volume I.

Table 8  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	63,307	77
Scenic Quality Class B	18,419	23
Scenic Quality Class C	0	0
Total	81,726	100
Management Class I	0	0
Management Class II	63,935	78
Management Class III	2,454	3
Management Class IV	15,337	19
Total	81,726	100

Source: USDI, BLM, 1982c

### Cultural Resources

There are seven archaeological sites (campsites and chipping sites) recorded in the Mt. Ellen portion of the WSA (USDI, BLM, 1988a). This area has a moderate to high potential for the discovery of additional sites. There are no sites recorded in the Blue Hills portion

of the WSA, and it is thought to have a low potential for the discovery of additional sites. There are 29 known sites (mostly campsites and lithic scatters) on the west side of the WSA, including South Caineville and Thompson Mesas.

There are no sites in the WSA listed on the National Register of Historic Places. One historic site on South Caineville Mesa is the Pete Steele stone cabin, which has been nominated for National Register listing. No other known sites in the WSA are potentially eligible for listing on the National Register. However, the Bull Creek Archaeological District (which is on the National Register) is located immediately north of the WSA; there are 113 recorded sites in the district.

### Recreation

Fifteen recreational opportunities were evaluated for their quality in this WSA. Fourteen opportunities are present in varying degrees. Eight activities (dayhiking, nature study, wildlife observation, geologic sightseeing, general sightseeing, backpacking, camping, and photography) are considered of high quality in part of the WSA. A summary of selected recreational activities follows:

Dayhiking opportunities are outstanding in the southeastern part of the WSA because the area has very good access and several trails. A 3-mile trail leads from Bull Creek Pass to the summit of Mt. Ellen; this trail is rapidly increasing in popularity and is frequently used by organized groups. Since Mt. Ellen is the highest peak in the Henry Mountains, superb vistas of numerous geologic features of central Utah are possible. Another trail ascends the mountain from the Lonesome Beaver Campground via Log Flat. This alternate route is often passable when the road to Bull Creek Pass is blocked by snowdrifts.

Extended backpacking trips of several days' length are possible via the Sweetwater Creek drainage or around the lower elevations of Mt. Ellen. Hiking routes total approximately 60 miles.

There is limited recreational use of ORVs on the 9.3 miles of way in the WSA, mainly in connection with hunting access. Approximately 35,000 acres of the Blue Hills area would be closed to ORV use in accordance with the Henry Mountain MFP. The remaining 46,726 acres, including all 9.3 miles of existing vehicular way, would be open to ORV use according to the MFP.



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Because of the wide variety in elevation, vegetation, and the presence of deer and bison range, this WSA has good opportunities for hunting and excellent opportunities for wildlife observation. Bison are frequently observed grazing on the alpine grasslands in mid-summer.

Nature study opportunities are outstanding because of the presence of four biological life zones (Upper Sonoran, Transition, Canadian, and Hudsonian) in a relatively small area.

Visitor use in the WSA is estimated at less than 200 visitor days per year for all activities except hunting. No hunting use figures are available for the WSA alone. However, the WSA contributes to the following annual hunting use in the entire Henry Mountain area: 150 visitor days for bison; 340 visitor days for deer; and 110 visitor days for upland game. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980.

On the basis of the above information, BLM estimates that the overall recreation use in the WSA averages about 800 visitor days per year (200 visitor days primitive and 600 associated with vehicle use).

## Land Use Plans

This WSA is in Wayne and Garfield Counties. The Final Report, Wayne County Master Planning Project (Call Engineering, Inc., 1976) covers the northern part of this WSA. The plan does not identify recommendations at specific locations. The plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states: "Open spaces should be used for many purposes rather than strictly as wilderness areas." The Wayne County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The Garfield County Master Plan (Five County Association of Governments, 1984) covers the southern part of this WSA. The Master Plan recognizes that the county possesses "... some of the most spectacular scenery in the United States ... is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs be recommended for wilderness. The plan recommends that the remaining lands within the coun-

ty, including the Mt. Ellen-Blue Hills WSA, be retained for multiple uses. According to the plan, multiple use includes forestry, livestock grazing, mining, wildlife, and recreation. The Garfield County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under provisions of the BLM Henry Mountain MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action/No Wilderness Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans. Wilderness is not addressed in the Henry Mountain MFP. Wilderness designation is part of the BLM multiple-use concept. BLM land use plans are linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative. Two designated ACECs, South Cainville Mesa (4,100 acres) and Gilbert Badlands (3,680 acres) are in the Mt. Ellen-Blue Hills WSAs. South Cainville Mesa is an isolated natural ecological system with relict vegetation. The Gilbert Badlands are a unique geologic feature.

The WSA is BLM-administered public land except for nine State sections (5,944.9 acres). The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands. In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. All 5,944.9 acres of in-held State land are under lease for grazing.

There are no private in-holdings, private subsurface rights, or rights-of-way within the WSA.

## Socioeconomics

### • Demographics

The WSA is within Wayne and Garfield Counties, two of Utah's least populated and most rural counties. From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 9 presents baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987, population increased to about 4,085. Population projections for Garfield County indicate that the number of people living in Garfield County in the year 2010 will be



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about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 9  
Baseline and Projected Population and Employment Growth  
Garfield and Wayne Counties

	1980	1990	2000	2010
<b>Garfield</b>				
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200
<b>Wayne</b>				
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.

From 1970 to 1980, the population of Wayne County grew from 1,483 to 1,950, an overall increase of about 31 percent. Table 9 presents baseline and projected population data for Wayne County. It is estimated that between 1980 and 1987, population increased to about 2,090. Population projections for Wayne County indicate that the number of people living in Wayne County in the year 2010 will be about 2,550 for about a 31-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

The closest community to the WSA is Hanksville, a small community of approximately 350 people, located about 13 highway miles to the east.

## • Employment

Wayne and Garfield Counties are among the counties with the lowest average personal income in the State of Utah (South, et al., 1983). Table 9 shows the baseline and projected total employment for Garfield and Wayne Counties to the year 2010.

Garfield County is part of the Southwest Multi-County District (MCD). Table 10 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to

18 percent, and mining to less than 1 percent of the total MCD.

Table 10  
Southwest Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	6,500	8,100
Nonfarm Proprietors	2,386	3,100	3,500	4,700
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

Wayne County is part of the Central MCD. Table 11 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the MCD.

Table 11  
Central Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, Insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	2,278	2,800	3,300	4,100
Totals	18,400	21,800	25,000	29,000

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Juab, Millard, Piute, Sevier, and Wayne Counties.

It is projected that by the year 2010, employment in the Central MCD will increase by 57 percent and that trade will increase to 17 percent and nonfarm proprietors to 14 percent of the total. Agriculture will decline to 13 percent, government to 17 percent, and mining will decline 1 percentage point to 3 percent of the total MCD employment.



# MT. ELLEN-BLUE HILLS WSA

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, woodland production, and recreation. Table 12 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 12  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	None	None
Mining Claim Assessment	\$23,100	None
Livestock Grazing	\$62,680	\$4,826
Recreational Use	\$3,280	Unknown <sup>b</sup>
Woodland Products	<u>\$4,900<sup>c</sup></u>	<u>\$350</u>
Total	\$93,960	\$5,176

Sources: USDI, BLM, 1982a; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

<sup>b</sup>A few commercial permits have been issued since 1980.

<sup>c</sup>This amount is not equivalent to sales but is the value of forest products to those who gather them.

The WSA has 231 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income.

One oil and gas well has been drilled in the WSA. This drilling generated an estimated 1.5 work years of employment, some of which represent local employment. However, no oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Eighteen livestock operators have a total grazing privilege of 3,134 AUMs within the WSA. If all the forage in the WSA were utilized, it would account for \$62,680 of livestock sales, including \$15,670 of ranchers' returns to labor and investment.

Some woodland products are harvested from the WSA; however, the harvests have been small (approx-

imately 60 cords of firewood and 200 fenceposts per year) and would be worth only about \$4,900. This is insignificant to the local economy and only of minor significance to those involved in the harvest. Most firewood harvest is for personal use rather than for sale to others.

The WSA's recreational use is low. Related local expenditures are low and insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the area, including the Mt. Ellen-Blue Hills WSA, is estimated at about 800 visitor days per year.

The WSA generates Federal revenues from livestock and woodland products. Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 3,134 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$4,826 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of range-land improvements.

Harvest of 60 cords of firewood and 200 fenceposts from the WSA could generate an estimated \$350 of Federal revenues annually.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume IV. The following analysis is based on implementation of the Action Scenarios presented in the Description of the Alternatives.

A major long-term consideration in impact analysis for this WSA is development of a portion of the Henry Mountains coal field. For a detailed analysis of potential impacts of coal development in Southern Utah, the reader is referred to the Final EIS for "Development of Coal Resources in Southern Utah" (USDI, USGS, 1979).



# MT. ELLEN-BLUE HILLS WSA

## No Action/No Wilderness Alternative

### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 63,935 acres and ORV closure on 35,000 acres).

Disturbance of approximately 1,001 acres in the short term from pinyon-juniper chaining and seeding and development of a livestock reservoir, and disturbance of approximately 3,000 acres in the long term due to coal development would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas involving up to 4.5 percent (4,001 acres) of the WSA. The only special feature that would be affected is the Class A scenery which would be reduced in quality in the disturbed areas. Most special features, including Mt. Ellen Peak, badlands, shark teeth, bristlecone pine, special status animal and plant species, and wildlife associated with wilderness, would not be negatively affected because the disturbance generally would not be located where the special features are located. The proposed vegetation treatment would benefit wildlife special features associated with wilderness because of increased forage. Appropriate measures would be taken to protect endangered and sensitive species prior to any surface-disturbing activity, ensuring that populations of these species would not be significantly affected. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information.

During the period of activity, the visual and audible disturbance from the vegetation treatment, rangeland developments, and coal development would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 15 percent (12,260 acres) of the WSA could be so affected.

Because future vehicular use would generally be limited by terrain to the existing 9.3 miles of vehicular way and future roads associated with coal development, no additional disturbance from ORV activity is anticipated. The continued and increased use of exist-

ing ways and future roads associated with coal development would continue to detract from opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur over time would be expected to reduce the quality of the primitive recreation opportunity because the additional use would be largely vehicular in nature.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 4,001 acres of the WSA and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 12,260 acres. Class A scenery would be reduced in quality in the disturbed areas. Bison would benefit from increased forage.

### • Impacts on Air Quality

The WSA would continue to be managed as a PSD Class II area. The close proximity of Capitol Reef National Park (7 miles to the west) may require any major developers in the WSA to meet standards more strict than Class II. Disturbance of up to 3,000 acres (100 acres per year for 30 years) by surface mining of coal would result in increases in fugitive dust emissions. If chained and seeded, the 1,000-acre vegetation manipulation also would result in short-term increases in fugitive dust emissions. Occasional increases in fugitive dust would not significantly affect air quality because disturbed areas would be reclaimed.

Conclusion: Air quality would not be significantly reduced. PSD Class II air quality standards in the WSA or PSD Class I air quality standards in Capitol Reef National Park would be maintained.

### • Impacts of Geology and Topography

Surface mining of coal over the long term would modify the topography on 2,825 acres. This would not detract from any geologic features of educational or scientific interest. No additional impacts to geology or topography are expected because disturbances associated with coal mine support facilities and vegetation manipulation would be mostly surface-disturbing activities not affecting the geologic structure or topographic features of the area.



Conclusion: Topography would be modified on 2,825 acres.

- Impacts on Soils

In the long term, it is estimated that up to 3,000 acres of soil could be disturbed by surface mining of coal and associated support facilities. Assuming that all disturbance would occur in areas of critical erosion class and that erosion condition would increase one class, soil loss on the 3,000 acres would increase from 8,100 cubic yards per year to 16,200 cubic yards per year. Soil loss would decrease as reclamation occurred. The time required, however, for complete reclamation could vary from 5 to 40 years depending on restoration methods and seasonal conditions.

Therefore, with this alternative, maximum annual soil loss related to mineral exploration and development in the WSA would increase by approximately 8,100 cubic yards (approximately 7 percent) over current annual soil loss to approximately 109,594 cubic yards per year until reclamation was complete.

The 1,000-acre vegetation manipulation would be designed to improve groundcover and soil conditions. Groundcover would be disturbed during the early implementation stages (1 to 2 years). Within 3 years, groundcover would be expected to equal or exceed cover prior to treatment (USDI, BLM, 1983b). Because this and other vegetation manipulation and erosion control projects would be allowed with this alternative, there would be the potential to control future erosion problems within the WSA, should the need arise.

Conclusion: Over the long term, soil loss would increase a maximum of 8,100 cubic yards per year with an unquantified but slight increase in salt production.

- Impacts on Vegetation Including Special Status Species

The approximately 4,000 acres of surface disturbance projected for the No Action/No Wilderness Alternative would mainly occur in the pinyon-juniper woodland. On the 1,000-acre chaining and seeding in the Dry Lake/Nasty Flat area, vegetation composition would change from pinyon-juniper woodland to grass-shrub. It is projected that the grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceased, the area would even-

tually revert back to pinyon-juniper woodland. The chaining and seeding would be designed to improve wildlife habitat. Dead-and-down firewood would also be made available. There would be a loss of naturalness in the disturbed areas. The anticipated disturbance due to coal development in the long term would occur on up to 3,000 acres. Reclamation procedures would require native species be replaced in the disturbed area. The 1 acre of surface disturbance resulting from construction of the livestock reservoir would also remain over the long term as the reservoir would be maintained. The total size of the disturbance would be less than 5 percent (4,001 acres) of the WSA.

The one endangered species, Sclerocactus wrightiae, and one Category 1 (Pediocactus winkleri) and two Category 2 (Eriogonum cronquistii and Spiranthes diluvialis) candidate species that may occur in the WSA are of restricted distribution. However, habitats extend beyond the WSA boundary. Before authorizing any surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (see Appendix 4 in Volume I). Mitigation measures, such as avoidance of sensitive areas, would be implemented. It is probable that portions of the surface mining area would be set aside to preserve special status plant species. Because surface disturbance is projected for the WSA, the potential exists for the inadvertent loss of individual special status plant species. However, because necessary measures would be taken to protect these species, the viability of the populations of threatened, endangered, or other special status plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Special status plant species populations would not be significantly impacted. About 4,000 acres of pinyon-juniper woodland would be altered. About 1,000 acres would be maintained as a grass-shrub community.

- Impacts on Water Resources

Because control measures would be required during mining operations, no significant sedimentation or change in TDS is expected to occur from the 8,100-cubic-yard increase of annual soil loss from surface disturbance related to mineral development. The



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planned 1,000 acres of vegetation manipulation would be expected to enhance watershed conditions when the seeded species become established. Water development for livestock (one reservoir now proposed) could be carried out, and future projects for use of the WSA's water (Birch Creek) for irrigation on lands outside the WSA could be further considered if and when proposed by local interests.

Long-term use of groundwater could reach a maximum of 187 acre-feet per year for the 30-year project life of the coal mine on Wildcat Mesa.

Surface mining of 2,825 acres of coal could result in small increases in polluted runoff, but this would be regulated by mine plan provisions and by the State of Utah through required discharge permits.

Conclusion: Surface coal mining in the Wildcat Mesa area could result in slight increases in TDS and other pollution. Up to 187 acre-feet of groundwater per year would be used in coal mining.

- Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, about 20,000 acres of crucial deer range and about 20,100 acres of crucial bison range would be managed on a multiple-use basis. About 1,000 acres of proposed vegetation treatments, providing a potential 140 AUMs net gain in wildlife forage production, could be undertaken with this alternative. This project would not only provide additional forage (especially high quality forbs) but would also help reduce grazing pressure and forage competition on crucial deer summer range.

The current deer population on crucial summer range within the WSA is estimated at 113 animals (USDI, BLM, 1983b). If all the projected (140 AUMs) increased production from land treatments on crucial

summer range within the WSA were used by deer, enough forage would be produced to support an additional 126 deer on this range.

The current number of bison utilizing the area within the WSA is estimated at 52 animals. This includes animals using crucial summer and yearlong ranges (USDI, BLM, 1983b). If all the (140 AUMs) increased production from land treatments on crucial bison summer and yearlong ranges were used by bison, enough forage would be produced to support an additional 15 bison on these ranges. The potential 3,000 acres of surface disturbance associated with coal on Wildcat Mesa are not within the crucial ranges.

With this alternative, both bison and deer numbers are expected to increase in the long term because possible habitat loss from surface-disturbing activities would be more than compensated for by increased range quality from land treatments.

All wildlife species in the vicinity of the 3,000 acres (about 4 percent of the WSA) subject to disturbance due to coal strip mining would be destroyed or displaced.

The extent and use of the WSA by the peregrine falcon (an endangered species) and six other Category 2 candidate species that may occur there is unknown. Chaining would not affect the peregrine falcon because it generally nests in cliff areas. The Great Basin Silverspot butterfly, white-faced ibis, and the Mt. Ellen pocket gopher generally inhabit riparian or wet meadow and would not be impacted by pinyon-juniper woodland chaining or surface coal mining on Wildcat Mesa. One small riparian area on the east side of Wildcat Mesa would not be mined as it was classified as unsuitable in the Henry Mountain MFP.

Chaining would improve ferruginous hawk habitat by creating ecotones and edges in the pinyon-juniper woodland. Impacts on the Tanner's black camel cricket and the Mt. Ellen chipmunk are unknown.

BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures such as avoidance of sensitive areas, would be implemented. Because necessary measures, would be taken to protect these species, potential populations of



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threatened, endangered, or other special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Habitat and populations of special status animal species would not be significantly affected. Projected vegetation treatments and water developments would result in an increase of up to 140 AUMs of big game forage and would provide water and ecotones. Wildlife would be displaced and destroyed as a result of the surface mining operations on about 4 percent of the WSA.

### • Impacts on Forest Resources

The WSA's forest resources have received minimal use in the past and no increase in use would occur in the short term. The planned vegetation treatment and rangeland project would eliminate less than 5 percent (1,000 acres) of the pinyon-juniper woodland in the WSA. In the long term, up to 3,000 acres of pinyon-juniper woodland (about 13 percent [2,825 acres] of the pinyon woodland in the WSA) would be removed for strip mining of coal. However, reclamation efforts could be expected to re-establish native species. There would be no opportunity for commercial harvest of wood products due to the inaccessibility of the Douglas fir stand and because the Sawmill Basin (where Ponderosa pine is located) would continue to be closed to wood product harvest under the Henry Mountain MFP. Therefore, implementation of the No Action/No Wilderness Alternative would not result in a significant increase in harvest or loss of forest resources.

Conclusion: The No Action/No Wilderness Alternative would not result in any significant increase in harvest or loss of forest resources in the WSA.

### • Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 3,134 AUMs currently allocated in portions of six allotments in the WSA are used by cattle controlled by 18 livestock permittees. Since motorized vehicles are currently used very little to manage livestock in the WSA and no range improvements (other than the one reservoir) are planned for livestock, few, if any, changes in livestock management practices are expected. The 3,000 acres mined for coal in the long term would result in loss of livestock use during the period of mining operations; however, due to reclamation, forage

would equal or exceed the current amount after project completion.

Conclusion: Livestock grazing would be disrupted on 3,000 acres during mining operations. Livestock forage production would increase over the long term.

### • Impacts on Visual Resources

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 3,000 acres of surface disturbance from mineral and energy exploration and development and 1,000 acres of vegetation manipulation would be altered. Therefore, VRM Class II management objectives would probably not be met during the short term. Even after rehabilitation, some permanent localized impacts would be expected. VRM Class II management objectives would probably not be met on the 1,000 acres of vegetation manipulation, at least during the period of treatment. This intrusion would probably be visible and not meet VRM Class II management objectives until the treated area returned to natural (or natural-appearing) vegetation. The intrusion could be considered permanent if the manipulated area were regularly cleared of tree growth.

Conclusion: Significant visual impacts would occur on 5 percent (4,001 acres) of the WSA and in areas surrounding the disturbed lands.

### • Impacts on Cultural Resources

Disturbance of 3,000 acres by surface coal mining operations in the long term and as much as 1,000 acres from the planned vegetative manipulation in the short term with this alternative could inadvertently disturb or destroy unknown sites. However, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance and would lessen the chance of this happening.

Overall, there would be little effect on cultural resources due to the relatively low occurrence of cultural resources in the area and to mitigating measures that would be taken prior to surface-disturbing activities. Vandalism (not currently a problem in the WSA) would be expected to increase in proportion to the general population increase in the region.

Conclusion: No significant impact to cultural resources would be expected with this alternative.



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### • Impacts on Recreation

Primitive recreational opportunities would be diminished directly in the long term on up to 3,000 acres disturbed by mineral and energy activities and 1,000 acres disturbed by a planned vegetation manipulation in the short term. About 9.3 miles of way would remain open to ORV use. The Lonesome Beaver and Dandelion Flat Campgrounds would be used and continue to be maintained with motorized equipment. Present service and historical use would be maintained.

The proposed vegetation manipulation would impact sightseeing and primitive recreation opportunities because of the reduction of scenic and primitive values. However, it would improve big game habitat and would improve the opportunity for zoological sightseeing and hunting (USDI, BLM, 1983b).

The future trends in recreational use of the WSA are unknown. Based on a review of several projections (UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Cordell and Hendee, 1982; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the foreseeable future. At this rate overall recreational use is expected to increase from about 800 current visitor days per year to between 1,508 and 6,972 visitor days by the year 2020. About 75 percent of this use would continue to involve vehicular access. Both motorized and primitive recreation use would increase.

Conclusion: Primitive recreation opportunities would be reduced in quality or lost on 1,000 acres of pinyon-juniper chaining in the short term and 3,000 acres due to surface coal mining in the long term. Both motorized and primitive recreation use would increase. Use and service at the Lonesome Beaver and Dandelion Flats Campgrounds would be maintained.

### • Impacts on Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the potential oil and gas, coal, and locatable minerals in the WSA were developed, it would lead to increases in employment and income for Wayne and Garfield Counties. However, the probability of economic development of minerals within the WSA is low, except for coal at Wildcat Mesa which has a moderate to high potential in the long term (refer to the Mineral and Energy Resources

section for a description of mineral and development projections). The addition of 200 jobs resulting from a coal mining development would add approximately 5 percent to the projected combined Wayne and Garfield County work force by the year 2010. This would result in significant, direct, and indirect economic impacts to those two counties. Beneficial impacts would result from additional income, marketing opportunities, wider tax base, etc. Adverse impacts would result from increased demand on local infrastructures such as law enforcement, schooling, and sanitary facilities.

There would be no livestock-related economic losses because the existing grazing use (up to 3,134 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present.

Recreational use and recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the foreseeable future. Recreational use in the area is estimated to increase to between 1,508 and 6,972 visitor days per year over the foreseeable future. However, overall recreation-related expenditures will continue to average only \$4.10 per visitor day and increased recreation-related expenditures of \$6,183 to \$28,585 attributable to the WSA would likely not be significant to the local economy.

Short-term Federal and State revenues would not be reduced from present levels by this alternative.

Federal revenues in the long term would be increased through coal lease, bonus bids, lease fees, and royalties. Half of these monies would be allocated to the State, a portion of which could reach the local economy.

Conclusion: Short-term economic conditions would not be affected. In the long term, local economic conditions would be significantly affected by a 5-percent increase in employment (200 workers) in Wayne and Garfield Counties.

### **All Wilderness Alternative (81,726 Acres)**

#### • Impacts on Wilderness Values

Designation of all 81,726 acres as wilderness would contribute to the preservation of the wilderness values in the Mt. Ellen-Blue Hills WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through



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management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved on 80,116 acres that meet the naturalness criteria and 1,610 acres that do not. Solitude would be protected on approximately 60,000 acres that meet and 21,726 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on approximately 37,000 acres that meet and 44,726 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, bristlecone pine, geologic features, special status species, and wildlife associated with wilderness, would also be preserved.

Existing mining claims could involve valid existing rights which, if developed, would result in disturbance and loss of wilderness values. No development of valid existing rights is expected. In the foreseeable future, no development or disturbance that would negatively affect wilderness values is anticipated. Vegetation treatments that would benefit wildlife special features would be foregone. Although additional forage would not be provided, bison would still benefit from solitude.

Managing the Lonesome Beaver and Dandelion Flat Campgrounds which are inside the WSA as part of a wilderness area would conflict with management goals of both the campgrounds and the wilderness.

Vehicular use of the existing 9.3 miles of way would generally cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims.

The gradual increase in visitor use would be primitive in nature and would be managed so as to not result in loss of wilderness values.

Conclusion: Wilderness designation would preserve wilderness values. No disturbance is anticipated in the short or long terms that would affect wilderness values. Although bison would benefit from solitude, there would be no additional forage with this alternative.

### • Impacts on Air Quality

Potential fugitive dust emissions would not increase because the 3,000 acres of coal mining and 1,000 acres of vegetation manipulation possible with the No Action/No Wilderness Alternative would not occur.

Conclusion: Air quality would not be affected.

### • Impacts on Geology and Topography

No impacts to geology or topography would occur with this alternative because there would be no surface disturbance.

Conclusion: Geologic features and topography would not be affected.

### • Impacts on Soils

Impacts on soils would be much less with the All Wilderness Alternative than with the No Action/No Wilderness Alternative. However, erosion control benefits from the planned 1,000-acre vegetation treatments which would establish better groundcover would be foregone.

Conclusion: Soil erosion would remain at present levels. Opportunity to reduce soil loss on 1,000 acres would be foregone.

### • Impacts on Vegetation Including Special Status Species

The vegetation resource including special status plant species would be provided with additional protection over the entire WSA. No significant disturbances are projected, therefore, no impacts to the vegetation resources in the WSA would occur.

Conclusion: The vegetation types and special status plant species would be protected by the All Wilderness Alternative. No impacts to these resources would occur.

### • Impacts on Water Resources

Restraints on mineral development would protect water quality. With this alternative, benefits to the watershed from the planned 1,000-acre vegetation manipulation projects would be foregone.



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Water quality in the WSA would remain as at present because soils would not be disturbed. A proposed live-stock reservoir would not be allowed.

Conclusion: Wilderness designation would not alter present or future water quality. A proposed livestock reservoir could not be built.

- Impacts on Mineral Exploration and Production

- Leasable Minerals

No exploration or production of oil and gas are occurring at the present time and none is anticipated as there are no leases in the WSA. None would be issued prior to or following wilderness designation.

Exploration for and development of a potential oil and natural gas field would be foregone under this alternative. However, due to the small size (estimated 10 million barrels of oil and less than 60 billion cubic feet of natural gas) of the potential deposits and the presence of more favorable deposits elsewhere (both in size and location), it is concluded that this alternative would not result in a significant loss of potential recoverable oil and gas.

The opportunity to recover up to 163 million tons of coal would be foregone with this alternative. However, because most deposits in the WSA are believed to be split, thin, and contain small individual tonnages, it is unlikely that an economically recoverable coal resource would be foregone except in the Wildcat Mesa area. Although coal recovery in that area is not imminent, up to 60 million tons of surface minable coal would be foregone in the long term. At present this would not be significant, but would become more important in the future.

- Locatable Minerals

Approximately 4,620 acres are under mining claims within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines.

Because production is not occurring and because favorability for the occurrence of mineral resources within the WSA is low, it is unlikely that

substantial mining of locatable minerals would occur even without wilderness designation. This alternative would have little or no adverse effect on the recovery of locatable minerals in the foreseeable future

- Salable Minerals

It is unlikely that salable mineral deposits will ever be mined commercially, even without wilderness designation, due to the remoteness of the area and the multitude of deposits outside the WSA.

Conclusion: Wilderness designation would limit potential exploration and development opportunities for coal resources known to occur in the WSA. Opportunities for production of up to 60 million tons of coal would be foregone. No significant locatable or salable minerals production would be lost.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Approximately 20,000 acres of crucial deer range and 20,100 acres of crucial bison range would be protected by the application of the Wilderness Management Policy (BLM Manual 8560) and by the reduced likelihood for surface-disturbing and other activities, as compared to the No Action/No Wilderness Alternative. This alternative would preclude the opportunity for the planned treatment of 1,000 acres of pinyon-juniper on crucial deer and bison range. Potential for an additional 140 AUMs would be foregone along with the ability to support an additional 126 deer or 15 bison.

Because summer range is considered a limiting factor for mule deer on the Henry Mountains (USDI, BLM, 1983b) and land treatments to enhance the quality of this range would not be allowed, mule deer numbers in the WSA would remain at their present low levels with this alternative.

Wilderness management would protect 20,100 acres of crucial bison range within the WSA. However, bison numbers within the WSA would be expected to decline slightly in the long term with this alternative because (1) current bison use exceeds forage availability by 15 AUMs on crucial yearlong range (Steele Butte Allotment) within the WSA (USDI, BLM, 1983b); and (2) vegetation treatments which would increase forage availability by 140 AUMs would not be allowed. Land treatments are extremely important



to bison. Not only would they increase forage production but would also help reduce grazing pressure and forage competition on other crucial bison ranges.

Threatened, endangered, or other special status animal species would be protected with this alternative.

Conclusion: Wilderness designation would preclude 1,000 acres of big game habitat improvement but would prevent habitat destruction and provide all species with additional opportunities for solitude.

- Impacts on Forest Resources

No woodland harvest would be allowed, except by non-mechanical means. However, nearly all the aspen and Douglas fir is on steep slopes and is unavailable for harvest because of terrain. Although Ponderosa pine in the Sawmill Basin area is potentially harvestable, the current MFP does not allow for commercial harvesting, due to the high scenic and recreational values and low timber demand. Fencepost and firewood cutting would no longer be allowed on 16,950 acres where it is currently available in the WSA, however, demand for this resource within the WSA has been relatively low, and such needs could adequately be met elsewhere. Use of the forest resource would primarily be incidental to visitor use in the wilderness (i.e., campfires).

Conclusion: Private harvest of the pinyon-juniper woodland for small amounts of firewood and fenceposts would be precluded.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 3,134 AUMs currently allocated in portions of six allotments in the WSA are used by livestock of 18 permittees, and this use would remain at about the same level. The proposed reservoir would not be constructed. Because 3.5 miles of road would be cherry-stemmed in the Wildcat Mesa area and because very little use of motorized vehicles is currently taking place to manage livestock in the WSA, little change in the present management of livestock grazing is expected with wilderness designation. This alternative would prevent long-term loss of forage on 3,000 acres that may otherwise occur from coal exploration and development, as projected with the No Action/No Wilderness Alternative.

Conclusion: Wilderness designation would not significantly affect livestock management in the WSA.

- Impacts on Visual Resources

Beneficial effects would occur to the visual resources with the All Wilderness Alternative because the management class would change from VRM Classes II, III, and IV to the more restrictive Class I. This latter category generally allows only natural ecological change to the landscape and, therefore, would decrease the potential for activities that may degrade scenic quality.

Conclusion: Visual resources within the WSA would be preserved as a result of this alternative.

- Impacts on Cultural Resources

The probability of finding additional sites in the WSA is moderate. However, compared to other regions of southern Utah, there is little potential for vandalism to cultural resources due to increased primitive recreational use of the WSA. Also, protection afforded by wilderness management would limit vehicular access and outweigh any potential vandalism problems caused by recreational activity.

Conclusion: Cultural resources would be protected. The overall impact of wilderness designation on cultural resources would be positive.

- Impacts on Recreation

Although use is relatively low, the WSA has outstanding primitive recreational values. With this alternative, high quality recreational opportunities present would be recognized, managed, and preserved. This would be most significant in the southeastern portion of the WSA where the mountain peaks and outstanding opportunities for primitive recreation are prominent.

Vehicular use would be eliminated, preserving the quality of the primitive recreation opportunity. Primitive recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the foreseeable future in relation to population increases and current trends of recreational use. Management provided through a Wilderness Management Plan would attempt to control any possible destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased primitive use. Com-



## MT. ELLEN-BLUE HILLS WSA

mercial operations based on primitive recreational activities may eventually apply for use of the WSA.

Only limited ORV use is occurring or is likely to occur due to topographic restraints. Therefore, this alternative would not affect this use of the area except on the 9.3 miles of existing way which would no longer be available for hunter access. The present 600 visitor days use and potential for an increase of between 1,131 and 5,229 visitor days use associated with mechanized equipment would be precluded. Overall, recreation use in the WSA would initially decline but the gain in primitive use would eventually make up the difference.

The Lonesome Beaver and Dandelion Flat Campgrounds could not be used or maintained using motorized or mechanized equipment. This would cause administrative problems and disrupt historical use of the area.

Conclusion: This alternative would benefit primitive recreation. Approximately 200 visitor days of ORV use on 9.3 miles of way would be precluded. Mechanized maintenance and use of the Lonesome Beaver and Dandelion Flat Campgrounds would be eliminated, which would create administrative problems and disrupt historical recreation use of the area. Overall, recreation use would decline initially.

### • Impacts on Economic Conditions

In the short term, there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there would be potential losses in local income and Federal revenues (e.g., mineral leasing) that would be provided by resource activities in the WSA. Potential increases in income and Federal revenues that would occur with the No Action/No Wilderness Alternative would be lost.

Except for coal, the potential for mineral production in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). This would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action/No Wilderness Alternative. Because the potential for the most mineral development is low, it is estimated that the potential for the most mineral-related local income would not be significant-

ly reduced by wilderness designation. Foregoing possible future coal mining at Wildcat Mesa would eliminate about 200 jobs and significant local income in the long term. Also, any local income related to the assessment work on future mining claims or to woodland harvest would be lost.

An annual value of \$4,900 attributed to woodland product harvest (firewood and fenceposts) would be foregone.

Livestock use and ranchers' income would continue as at present with an estimated \$62,680 of livestock sales and \$15,670 of ranchers' return to labor and investment.

Existing (600 visitor days per year) and potential increases of recreation use associated with vehicular access would be foregone. Primitive recreation use would increase over the present annual 200 visitor days of primitive use at a rate of 2 to 7 percent per year. However, recreation-related expenditures would continue to average only \$4.10 per visitor day and the change in expenditures attributable to the WSA would not be significant to the local economy.

Rental fees from mineral leases and any potential royalties from lease production would be foregone.

Federal livestock grazing fees would continue at up to \$4,826 per year.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980.

Conclusion: Over the short term, wilderness designation would not effect local economic conditions. There could be significant impacts to long-term economic conditions as coal mining in the Wildcat Mesa and 200 potential jobs would be foregone.

### **Partial Wilderness Alternative (Proposed Action) (65,804 Acres)**

#### • Impacts on Wilderness Values

Wilderness designation of 65,804 acres would contribute to the preservation of the area's wilderness values in the designated area. Protection in the designated area would include management under VRM Class I (which generally allows for only natural eco-



## MT. ELLEN-BLUE HILLS WSA

logical change), ORV closure including closure of 4 miles of way, and closure to future mineral leasing and location. Overall, this alternative would preserve the area's best wilderness values. Naturalness (all designated acres meet the criteria); outstanding opportunities for solitude and primitive recreation (all of the acres meeting the standards of outstanding are included); and special features including Mt. Ellen Peak, Mancos Shale badlands, fossilized shark teeth, bristlecone pine, special status species, and wildlife associated with wilderness, including bison; would be preserved. Although additional forage would not be provided, bison would still benefit from solitude. The outstanding opportunities for primitive recreation in the Mt. Ellen area and the somewhat lesser qualities for hiking and primitive camping in the Blue Hills portion of the WSA would also be preserved.

Direct loss of naturalness and opportunities for solitude and primitive recreation would occur in the long term from coal development on up to 3,000 acres within the nondesignated portion. Special features would be largely preserved because disturbance would involve only 3.7 percent (3,001 acres) of the WSA, and development is generally not expected in areas where special features are located. In addition, appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and negative impacts to these species would not be significant (refer to the Wildlife and Vegetation Including Special Status Species sections).

Sights and sounds from foreseeable coal development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas including up to 12 percent (7,896 acres) of the WSA. All of this type of impact would be in the nondesignated area and would generally be in areas not considered to have outstanding opportunities for solitude and primitive recreation.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation in the designated area. Although primitive recreational use would increase, use relative to the size of the designated area would be low and effects on solitude and primitive recreation values would not be significant. Vehicular use of 5.3 miles of way and 5 miles of a future coal haul road in the nondesignated area would continue to detract from these opportunities during the period of activity.

The Lonesome Beaver and Dandelion Flat Campgrounds would be in the nondesignated area where management conflicts would not occur.

Conclusion: Wilderness values would be preserved in the designated area which is approximately 83 percent of the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly lost on 3,001 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 7,896 acres of the WSA. Although bison would benefit from solitude, there would be no additional forage with this alternative.

### • Impacts on Air Quality

Impacts on air quality and conclusions would be essentially the same as with the No Action/No Wilderness Alternative since all of the potential coal surface mining in the long term would occur in the nondesignated area. Occasional increases in fugitive dust would not significantly affect air quality because disturbed areas would be reclaimed.

Conclusion: Air quality would not be significantly reduced. PSD Class II air quality standards in the WSA or PSD Class I standards in Capitol Reef National Park would be maintained.

### • Impacts on Geology and Topography

With the Partial Wilderness Alternative, surface mining of coal would modify geologic conditions on 2,825 acres as described in the No Action/No Wilderness Alternative. Impacts and conclusions would be the same since the coal mining area would be in the nondesignated portion of the WSA and coal mining would be mined in the long-term future.

Conclusion: Topography would be modified by surface mining on 2,825 acres or about 3 percent of the WSA.

### • Impacts on Soils

About 3,000 acres of soil would be disturbed as compared to 4,000 acres with the No Action/No Wilderness Alternative because the 1,000 acres of vegetation treatment would not be allowed in the 65,804-acre wilderness area. Soil loss from coal development would be the same as with the No Action/No Wilderness Alternative. About 5,100 more cubic yards of soil per year would be lost than with the All Wilderness Alternative.



## MT. ELLEN-BLUE HILLS WSA

Conclusion: Over the long term, soil loss would increase a maximum of 5 percent or 5,100 cubic yards per year. However, soil loss would decrease as reclamation occurred.

- Impacts on Vegetation Including Special Status Species

No surface disturbance is projected for the designated portion of the WSA. Approximately 3,000 acres of surface disturbance would occur in the non-designated portion of the WSA as a result of the coal surface mining activities projected to occur in the long-term future. As discussed for the No Action/No Wilderness Alternative, before authorizing any surface-disturbing activities, BLM would require site-specific clearances of the potentially disturbed areas. Consultation with FWS would be initiated if necessary and appropriate mitigation measures, such as avoidance of sensitive areas would be implemented. Because surface disturbance is projected for the non-designated portion of the WSA, the inadvertent loss of individual special status species could occur. However, because the necessary measures would be taken to protect these species, the viability of populations of special status plant species would not be affected.

The projected disturbance would affect less than 4 percent of the WSA, therefore major impacts to vegetation types in the WSA are not projected.

Conclusion: The viability of populations of special status plant species in the WSA would be maintained. Impacts to vegetation types would not be significant.

- Impacts on Water Resources

Perennial waters in the WSA would be within the 65,804-acre designated portion, including 20 springs and 16 miles of perennial streams. This area also includes the high quality waters. The 7 miles of streams in the non-designated area are of lesser quality. This alternative would protect the most significant surface-water resources in the WSA.

Impacts from the Wildcat Mesa surface coal mine would be the same as for the No Action/No Wilderness Alternative. The benefits to watershed conditions that could be expected from the 1,000-acre pinyon-juniper chaining and seeding would be precluded. The proposed livestock reservoir would not be allowed.

Conclusion: Total dissolved solids could increase slightly. Up to 187 acre-feet of groundwater per year would be used in surface coal mine operations.

- Impacts on Mineral Exploration and Production

- Leasable Minerals

The area that would be designated wilderness would be placed in Category 4 status with no new oil and gas leasing.

However, it is concluded that, due to the small size of the potential deposits, the low certainty that they exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

In the nondesignated area there are 2,825 acres of surface minable coal resources containing up to 60 million tons of minable coal. Although none is currently leased, it could be developed in the long-term future without direct limitation from wilderness designation.

- Locatable Minerals

Approximately 219 mining claims covering 4,380 acres are within the area that would be designated wilderness. Development work, extraction, and patenting could continue on existing valid claims after wilderness designation. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Because locatable minerals within the WSA are not being recovered at present, and the low probability of discovery and economic considerations, it is unlikely that exploration or development will occur in either portion of the WSA. Therefore, this alternative would have no significant effect on recovery of these minerals.

- Salable Minerals

It is unlikely that salable mineral deposits will ever be mined commercially, even without wilderness designation, due to the remoteness of the area and the multitude of deposits outside the WSA.



## MT. ELLEN-BLUE HILLS WSA

Conclusion: Implementation of the Partial Wilderness Alternative would not have a significant adverse effect on mineral and energy resource exploration and production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife in the designated area would be impacted the same as with the All Wilderness Alternative and additional forage for deer and bison would not be provided. Herd sizes would be expected to remain near present levels or reduce slightly due to competition for forage. All crucial deer and bison range (refer to Table 6) would be protected within the 65,804-acre area designated as wilderness.

In the nondesignated area all wildlife species in the vicinity of Wildcat Mesa could be impacted by the destruction of habitat due to surface mining of 2,825 acres of coal. However, before authorizing any surface-disturbing activities, BLM would conduct site-specific clearances and consult with the FWS as described in the No Action/No Wilderness Alternative. Thus, significant adverse impacts to special status animal species that may occur in the WSA are not expected.

Conclusion: Populations would not be significantly reduced. Therefore, impacts to habitats or populations of special status animal species would not be significant. Wildlife would be displaced or destroyed on 4 percent of the WSA (3,000 acres) as a result of surface-mining operations, but overall populations would not be reduced.

- Impacts on Forest Resources

Impacts on the forest resource would not be significant since current harvest is low and such use could be readily met elsewhere. Less than 14 percent (3,000 acres) of the pinyon-juniper woodland type would be removed by the mining operations. These would be replaced as rehabilitation proceeded.

Conclusion: Impacts on forest resources would not be significant.

- Impacts on Livestock Management

Wilderness designation of 65,804 acres of the WSA would affect access for livestock management essentially the same as with the All Wilderness Alternative. Of the estimated 3,134 AUMs allocated, 2,350

AUMs would be within the designated portion of the WSA and 784 AUMs within the nondesignated portion. Development of future roads or other livestock management facilities for use with 2,350 AUMs in the designated portion could be restricted to preserve wilderness values. The livestock reservoir would not be constructed. Because motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected in the designated portion.

Conclusion: With the implementation of the Partial Wilderness Alternative, approximately 1,000 acres of pinyon-juniper tree removal and seeding with grass species would not be allowed which would impact livestock management.

- Impacts on Visual Resources

Mineral-related surface disturbance would occur on 3,000 acres under this alternative. VRM Class II management objectives would probably not be met. However, the 1,000 acres of pinyon-juniper chaining would not be allowed and no impacts to the visual resources would occur in the designated area.

Conclusion: Impacts on visual resources would be significant in disturbed areas. About 4 percent (3,000 acres) of the WSA, as well as surrounding areas, would be affected.

- Impacts on Cultural Resources

Twenty-four known sites, including the historic stone cabin being nominated for the National Register, would be protected within the designated portion of the WSA. Another 12 known sites would be within the nondesignated area. Those sites in the nondesignated portion would not receive the added protection that wilderness designation may provide, but still would be covered by the normal cultural resources protection laws and regulations. Due to the potential for up to 3,000 acres of surface disturbance related to minerals, there would be an increased chance for needed cultural resource mitigation or salvage as compared to the All Wilderness Alternative.

Conclusion: No significant impacts to cultural resources would be expected from this alternative.

- Impacts on Recreation

The quality of the primitive recreation opportunity would be preserved in the 65,804-acre area that



## MT. ELLEN-BLUE HILLS WSA

would be designated as wilderness. Closure of 4 miles of ways within the designated portion of the WSA could inconvenience a few hunters accustomed to use of those ways. However, hunting likely would remain the major recreational activity even in the designated portion of the WSA.

Little change in recreational use is expected in the area that would not be designated (15,922 acres). About 5.3 miles of ways in this part of the WSA would continue to be used for ORV access. The Lonesome Beaver and Dandelion Flat Campgrounds would be in the nondesignated area and could be used and maintained as in the past.

Overall use may initially decline slightly due to loss of vehicular access.

Conclusion: Primitive recreational opportunities would be preserved in the designated area. The opportunity for vehicular access on 4 miles of way would be eliminated although access on 5.3 miles of way would continue. There would be no conflicts with use and maintenance of the Lonesome Beaver and Dandelion Flat Campgrounds. Initially, overall use would decline slightly.

### • Impacts on Economic Conditions

Partial designation of this WSA is not expected to result in any changes in existing patterns and trends of population, employment, and local income distributions in the short term. In the long term, coal development could potentially take place on the nondesignated portion. This could lead to increased income and revenue in Garfield and Wayne Counties, as well as beneficial and adverse economic effects as described in the No Action/No Wilderness Alternative. The 3,134 AUMs would remain available to cattle. Revenue, sales, and returns to ranchers would be the same as with the No Action/No Wilderness Alternative. There would be a potential gain in Federal revenue from any future coal and oil and gas leases issued in the nondesignated portion.

Primitive recreational use could increase from the current estimated use of 200 visitor days at a rate of 2 to 7 percent per year. There would be some initial loss in visitor days attributed to vehicular access, however, recreation-related expenditures would continue to average only \$4.10 per visitor day and any change in expenditures attributable to the WSA would likely not be significant to the local economy.

Conclusion: Over the short term, the Partial Wilderness Alternative would not affect local economic conditions. In the long term, local economic conditions would be significantly affected by a 5-percent increase in employment in Wayne and Garfield Counties.



# Bull Mountain WSA









# BULL MOUNTAIN WSA

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# BULL MOUNTAIN WSA

(UT-050-242)

## INTRODUCTION

### General Description of the Area

Bull Mountain WSA consists of 13,620 acres of public land in Garfield and Wayne Counties, about 13 miles southwest of Hanksville, Utah. About 10,120 acres of the WSA are in Garfield County and 3,500 acres are in Wayne County. Bull Mountain (elevation 9,187 feet) is a prominent peak in the Henry Mountains and is joined to Mt. Ellen by Wickiup Ridge. Bull Mountain has extremely steep, rugged sides, and is domal in shape. Pinyon pine and juniper trees dominate the lower elevations and mixed conifer trees are found at higher elevations. Principal uses of the area include wildlife habitat, livestock grazing, low intensity recreation, and limited mineral exploration.

It is immediately adjacent to the 81,726-acre Mt. Ellen-Blue Hills WSA; the two WSAs are separated only by the gravel surfaced Sawmill Basin Road.

Average annual precipitation ranges from 7 inches at lower elevations to 17 inches atop Bull Mountain. Temperatures range from -20 degrees Fahrenheit (F) to over 80 degrees F depending on elevation and season.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. A portion of the WSA boundary (T. 31 S., R. 11 E., secs. 17, 18, 19, 30 and 31) has been modified to coincide with BLM's 1980 Final Inventory Document which is the official record of WSA boundaries. For the Final EIS, the WSA acreage has been increased from 11,800 acres to 13,620 acres as depicted in the inventory document. However, a Partial Wilderness Alternative (11,800 acres) is also analyzed. This coincides with the Proposed Action as shown in the Draft EIS.

2. The BLM Proposed Action in the Draft EIS was the All Wilderness Alternative. The BLM Proposed Action for the Final EIS is the 11,800-acre Partial Wilderness Alternative which corresponds to the 11,800-acre All Wilderness Proposed Action in the Draft EIS.

Refer to Appendix 11 in Volume I for the rationale for the Proposed Action.

3. The anticipated surface disturbance presented in the Draft EIS (510 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a change of surface-disturbance estimates from the 510 acres reported in the Draft EIS to 600 acres of surface disturbance for the Final EIS.

4. The Draft EIS identified a 330-acre chaining and seeding pinyon-juniper woodland within the WSA to improve bison habitat. However, BLM projects that about 600 acres on the south and west side of Bull Mountain would be suitable for chaining and seeding to improve forage conditions for the Henry Mountain buffalo herd.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies and impacts on water rights), the following issues or impacts specific to the Bull Mountain WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Water Resources: There are no perennial streams and only three springs in the Bull Mountain WSA. The existing spring and pipeline development could be maintained as in the past and would not be affected.

STATEWIDE  
POCKET MAP  
WSA  
NO. **37**  
SEE VOL. I



# BULL MOUNTAIN WSA

Existing public water reserves on 383 acres would be maintained with or without wilderness. Therefore, the impacts of wilderness designation on water resources are not discussed in detail.

2. Mineral Resources: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no existing oil and gas leases within the WSA. Potential oil and gas deposits are small with a low certainty that they exist. Even though there are 39 mining claims in the WSA, projected uranium and other locatable mineral deposits are thought to be small with a low certainty of occurrence. More accessible deposits of salable minerals (building stone, sand, and gravel) exist outside the WSA. For these reasons mineral exploration or development would not occur in the foreseeable future with or without wilderness designation (see Appendix 6 in Volume I). Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

3. Forest Resources: Scattered stands of Ponderosa pine, Douglas fir, aspen, subalpine fir, and some bristlecone pine are found in the higher southwestern portion of the WSA. The Henry Mountain MFP precludes harvest of these species due to the lack of demand and to protect scenic, wildlife, and recreational values. Pinyon-juniper woodland is found throughout most the WSA. There is no record of recent harvest of any forest products in the WSA because there are better, more accessible sources. If a proposed 600-acre pinyon-juniper woodland chaining were completed, it would involve less than 10 percent (599 acres) of the existing pinyon-juniper woodland in the WSA and pinyon-juniper is a common vegetation type in Utah. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

4. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, only six cultural resource sites have been recorded in the Bull Mountain WSA and the potential for finding additional sites is considered to be low. No mineral-related surface disturbance is projected. Visitation is light (200 visitor days per year) and mainly primitive. Terrain and surface features limit vehicle use to the 4 miles of ways inside the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts

would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for the Bull Mountain WSA.

5. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation motorized recreation would eliminate or reduce opportunities for primitive recreation. Recreational use of the Bull Mountain WSA is light (estimated 200 visitor days per year), and would remain mostly primitive with or without wilderness designation due to the terrain of the WSA and limited access. Therefore, impacts on recreation use would not be significant and they are not analyzed in detail in the Final EIS.

6. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Because no economic developments are expected and because recreational use is only 200 visitor days per year, impacts on economic conditions for the Bull Mountain WSA are not significant issues for the Final EIS.

## • Issues Analyzed in Detail

The significant issues for the Bull Mountain WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on soils.
3. Impacts on vegetation including special status species.
4. Impacts on wildlife habitat and populations including special status species.
5. Impacts on livestock management.



# BULL MOUNTAIN WSA

## 6. Impacts on visual resources.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; WSA boundary location; BLM's inventory process; the need for further inventories of resource values; and BLM's assessments of wilderness values, visual resources, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 37, for responses to specific comments about the Bull Mountain WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

An alternative that would add 6,070 acres of Federal and State lands on the south and east sides of the WSA was suggested in the public comments. This alternative is not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1). Other citizen-proposed alternatives are comparable to the All Wilderness Alternative of 11,800 acres.

### Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness, (2) All Wilderness (13,620 acres), and (3) Partial Wilderness (Proposed Action) (11,800 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections with each alternative. These assumptions are indicated in each case. The Management Actions presented in the Introduction to Volume IV are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 13,620-acre Bull Mountain WSA (Map 1) would be designated by Congress as part of the NWPS. Although the BLM land use plans are updated regularly, it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c). There

are no State, private, or split-estate lands in the WSA. The figures and acreages given for this alternative are for Federal lands only.

#### • Management Conditions and Constraints

All 13,620 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on 39 existing mining claims (780 acres) and future mining claims. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809). There are no existing oil and gas leases. However, future leases could be developed under Category 1 (standard stipulations) on about 5,100 acres and Category 2 (standard and special stipulations) on about 8,520 acres.

Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or developments are projected in the WSA because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I and the Issues Considered But Not Analyzed In Detail section).

The present domestic livestock grazing use would continue as authorized in the Henry Mountain MFP (338 AUMs). Use and maintenance of the developed spring, 0.5 mile of fence, 550 acres of seeding, and 1.25 miles of pipeline would continue without concern for wilderness values.

Public water reserves of 383 acres would continue to be withdrawn from all public land laws and mining of nonmetalliferous minerals.

Developments for wildlife, water resources, etc., would be allowed without concern for wilderness values if in conformance with the current Henry Mountain MFP. Six hundred acres of pinyon-juniper woodland chaining and seeding are projected.

The entire WSA acreage would be open to vehicular use and new access routes would be allowed.

Commercial woodland harvest sales would not be allowed in accordance with the Henry Mountain MFP.



# BULL MOUNTAIN WSA

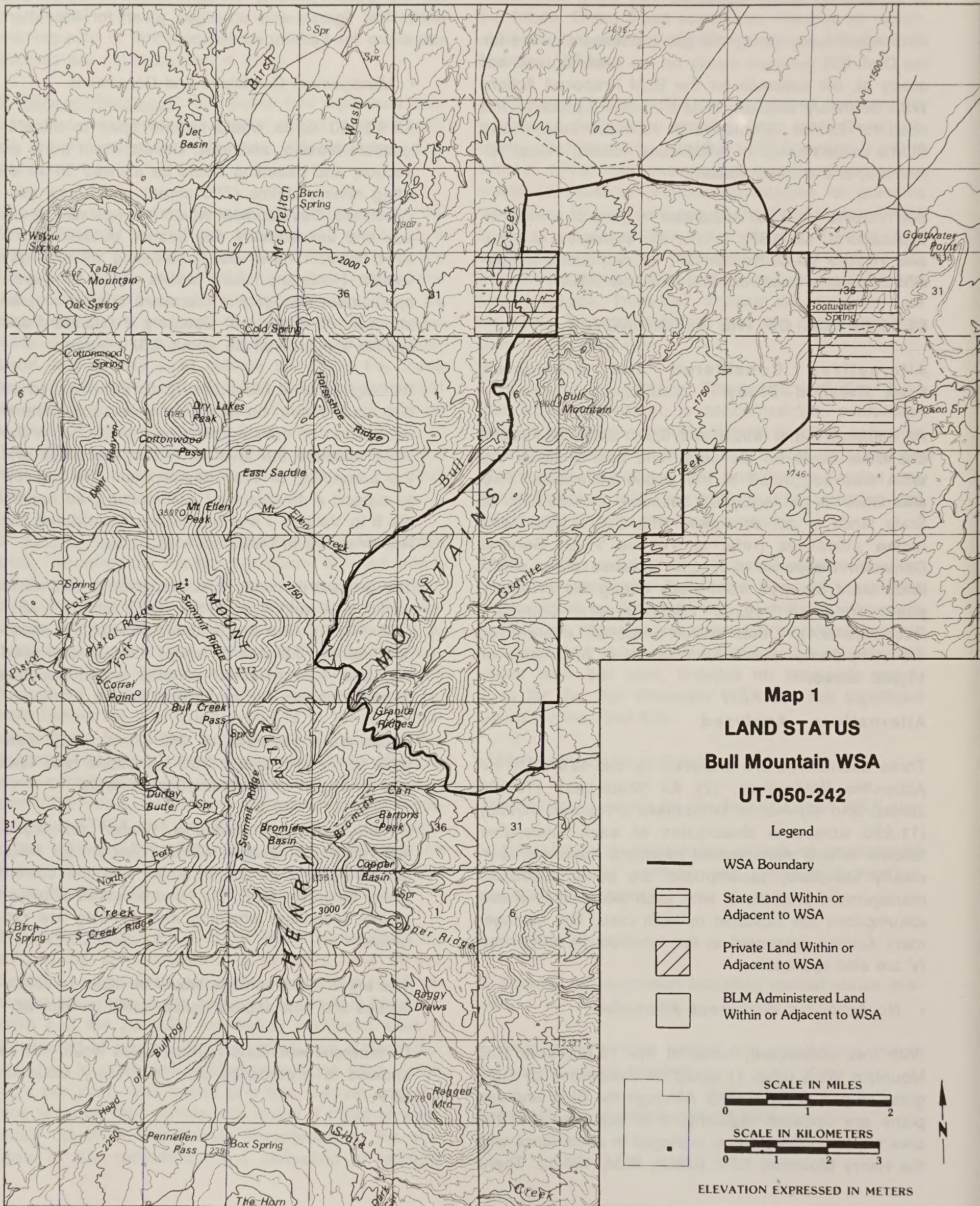
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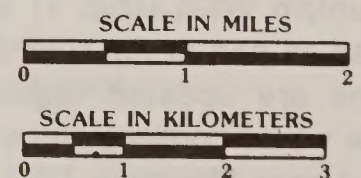
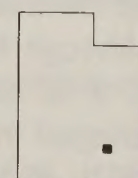
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**Map 1**  
**LAND STATUS**  
**Bull Mountain WSA**  
**UT-050-242**

Legend

- WSA Boundary
- State Land Within or Adjacent to WSA
- Private Land Within or Adjacent to WSA
- BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS



## BULL MOUNTAIN WSA

The area would continue to be managed under VRM Class II on 10,790 acres and Class IV on 2,830 acres.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment section, BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 600 acres of surface disturbance in the foreseeable future. This disturbance would be the result of a planned vegetation treatment in the southwestern portion of the WSA. It would be a pinyon-juniper woodland chaining and seeding designed to improve bison habitat. About 2 months would be required to complete this project. The chained and seeded area would be maintained but not expanded over the foreseeable future. No other rangeland, wildlife habitat, watershed projects, and other developments are planned. No locatable or leasable mineral resource exploration or development would occur in the foreseeable future.

No disturbance from ORV use is projected because traffic would continue to be restricted to existing boundary roads and 3 miles of ways because of the rough terrain.

Recreational use is expected to increase over the current estimated use of 200 visitor days per year at a rate of 2 to 7 percent annually. As much as 10 percent of the visitor use would continue to be from motorized access on 3 miles of ways.

- All Wilderness Alternative

With this alternative, all 13,620 acres of the Bull Mountain WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. No State lands are located in the WSA; however, four sections are adjacent (refer to Map 1). One of these (T. 30 S., R. 11 E., sec. 32), while not considered an in-holding, would be completely surrounded if Bull Mountain and Mt. Ellen-Blue Hills WSAs were designated wilderness.

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this

policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership. Refer to Volume I for further information on State in-holdings. The figures and acreages given under this alternative are for Federal lands only. No private or split-estate lands are located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 13,620 acres would be withdrawn from mineral location and closed to new mineral leasing and mineral sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 780 acres of existing mining claims that may be determined to be valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) with wilderness as a consideration. Oil and gas leases have been phased out of the WSA, and new leasing would not be allowed. Even though there are 39 mining claims within the WSA, the known level of resources and the probability of their development is so low that no mineral exploration or development is projected to occur in the WSA (see Appendix 6 in Volume I).

Present domestic livestock grazing would be allowed to continue as authorized in the Henry Mountain MFP. The estimated 338 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (in this case one developed spring, 1.25 miles of pipeline, 0.5 mile of fence, and 550 acres of chaining and seeding) could continue in the same manner as in the past based on practical necessity and reasonableness.

Public water reserves of 383 acres would continue to be withdrawn from all public land laws and mining of nonmetalliferous minerals.

Wildlife developments would be allowed after designation only if they are compatible with wilderness values. The 600 acres of pinyon-juniper chaining and seeding to improve forage for bison would not be allowed.

The entire 13,620-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560; or (2) occasional and short-term vehicular access approved by BLM for maintenance



# BULL MOUNTAIN WSA

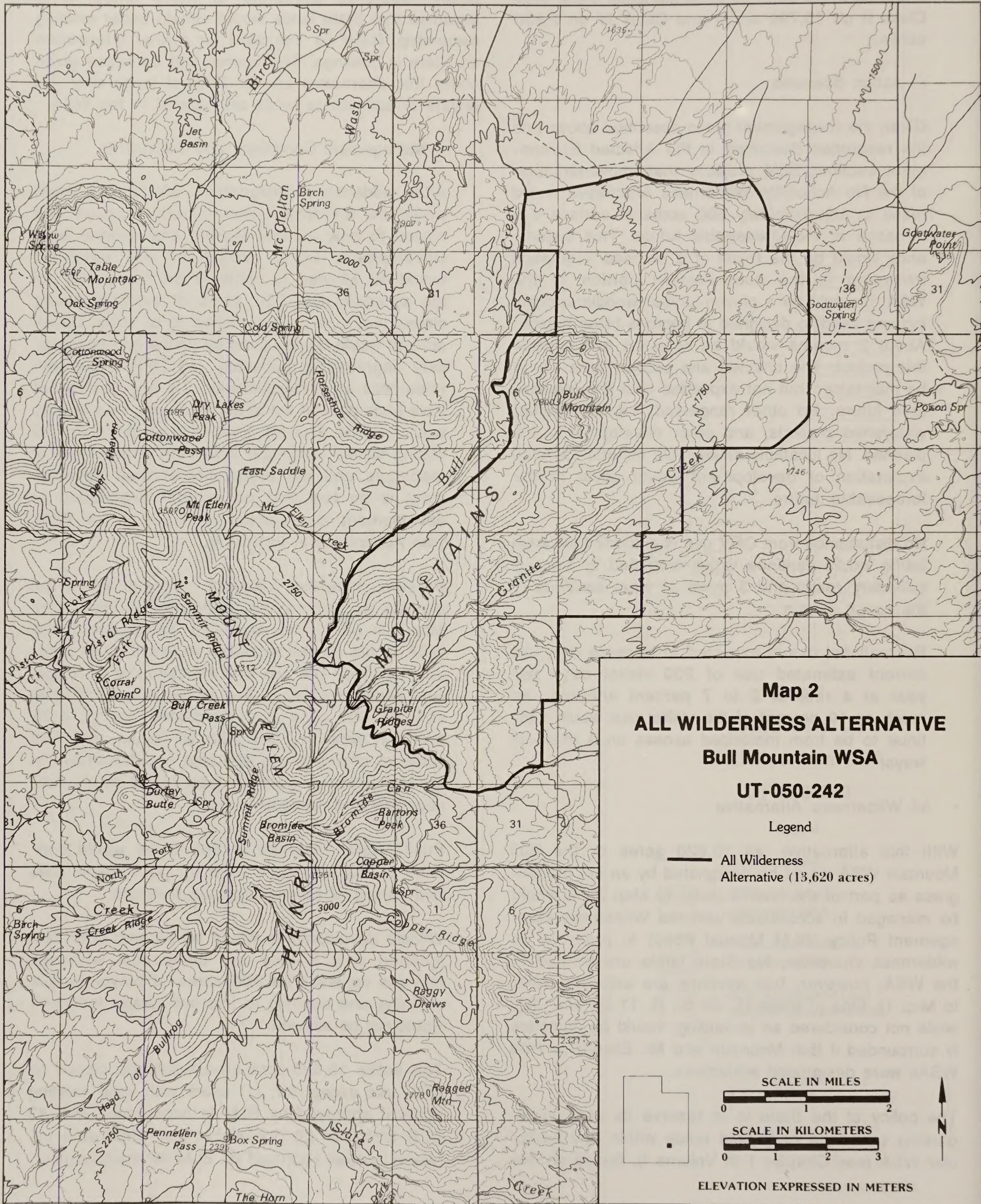
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## BULL MOUNTAIN WSA

of approved livestock developments. The approximately 3 miles of existing vehicular ways in the area would not be available for vehicular use except as indicated above. About 8 miles (40 percent) of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel.

Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means for use in the wilderness. There is no harvest of forest products at the present.

Visual resources in the wilderness would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.

- Action Scenario

BLM projects that no surface disturbance would occur in the foreseeable future. The planned vegetation treatment in the southwestern portion of the WSA would not be allowed. No mineral resources exploration or development of existing mining claims or mineral leases in the WSA is projected. Implementation of the All Wilderness Alternative would preclude new mineral location and leasing. Therefore, no locatable or leasable mineral resources exploration or development would occur following wilderness designation. No rangeland, wildlife habitat, watershed projects, or other developments would be allowed following wilderness designation.

No disturbance from ORV use is projected because of wilderness management restrictions and terrain.

Primitive recreational use is expected to increase over the current estimated use of 180 visitor days per year at a rate of 2 to 7 percent annually. No motorized recreational use would be allowed in the WSA.

- Partial Wilderness Alternative (Proposed Action) (11,800 Acres)

For this alternative 11,800 acres of the Bull Mountain WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to avoid conflicts of wilderness designation with existing

chaining and seeding projects while analyzing as wilderness those portions of this WSA that have the best wilderness values. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. The boundary of this Partial Wilderness Alternative conforms to the boundary of the All Wilderness Alternative as it appeared in the Draft EIS.

The 1,820-acre area within the WSA, but outside of that designated as wilderness under this alternative, would be managed in accordance with the Henry Mountain MFP and Grazing Management EIS as described for the No Action/No Wilderness Alternative. The 11,800 acres designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560), as described in the All Wilderness Alternative.

No State lands are located in the WSA; however, four sections are adjacent (refer to Map 1). One of these, (T. 30 S., R. 11 E., sec. 32), while not considered an in-holding, would be completely surrounded if Bull Mountain and Mt. Ellen-Blue Hills WSAs were designated wilderness. Based on the current State policy regarding exchange of State lands, it is assumed that State lands would remain under existing ownership (see Chapter 1 in Volume I).

There are no private or split-estate lands within the WSA. The figures given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 11,800-acre wilderness area would be withdrawn from mineral location and closed to new mineral leasing and mineral sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 780 acres of 39 existing mining claims that may be determined to be valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) with wilderness as a consideration. Oil and gas leases have been phased out of the area that would be designated as wilderness and new leases would not be issued. The 1,820-acre area not designated as wilderness would be managed as oil and gas leasing Category



# BULL MOUNTAIN WSA

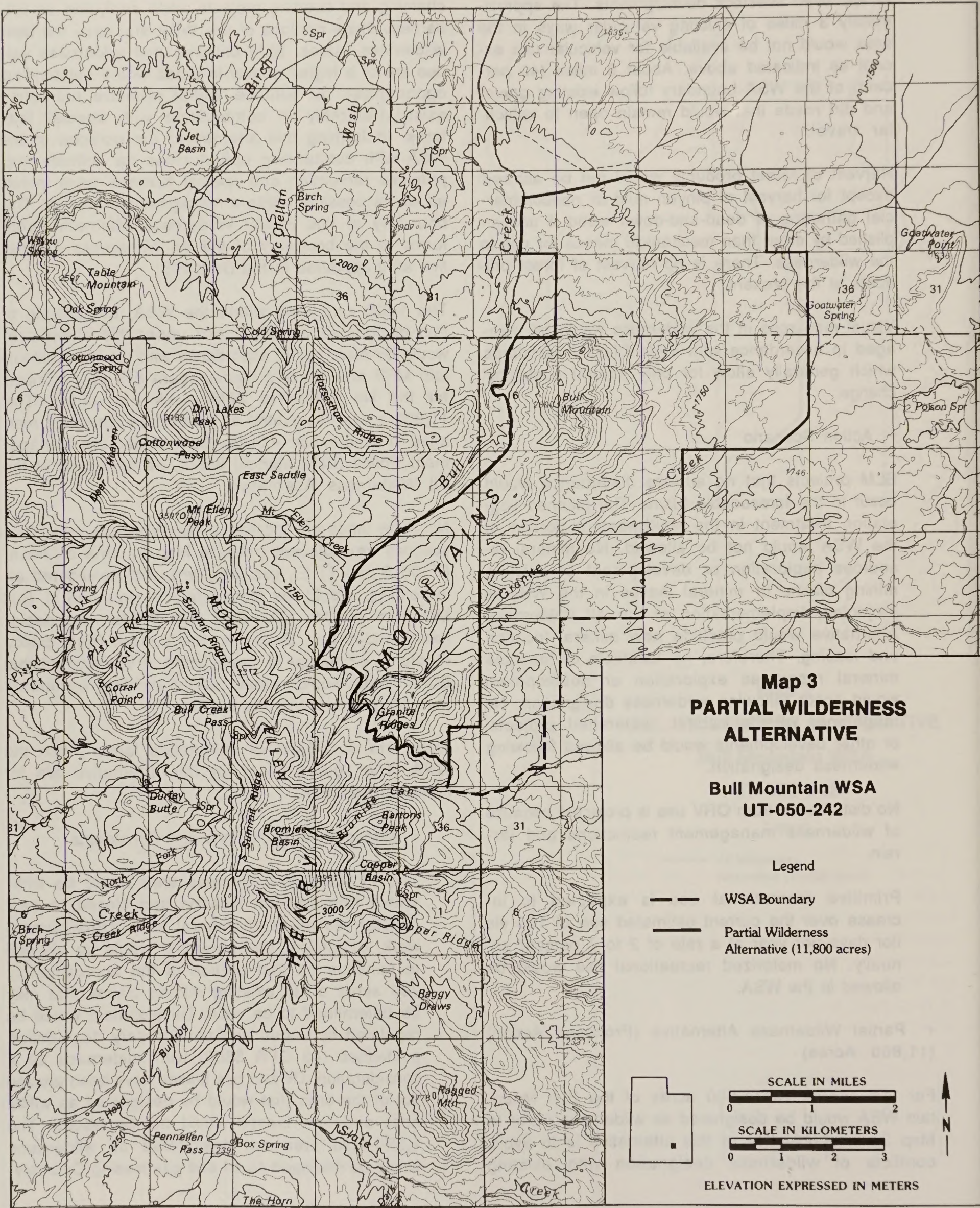
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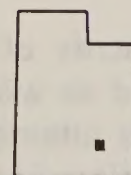


## Map 3 PARTIAL WILDERNESS ALTERNATIVE

Bull Mountain WSA  
UT-050-242

### Legend

- WSA Boundary
- Partial Wilderness Alternative (11,800 acres)



SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS





# BULL MOUNTAIN WSA

2 (standard and special stipulations). Future leases and claims could be developed without concern for wilderness values. Nevertheless, exploratory and development of locatable or leasable minerals are not expected because the level of known resources and the probability of their development are too low to support a development assumption.

Domestic livestock grazing would continue to occur in the 11,800-acre wilderness area. The 193 AUMs in the designated area would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (in this case one developed spring and a 0.25 mile of pipeline) could continue in the same manner as in the past based on practical necessity and reasonableness.

In the 1,820-acre nonwilderness area, grazing use would continue as authorized in the Henry Mountain MFP and Grazing EIS (145 AUMs). Maintenance of 550 acres of seeding, 1 mile of pipeline, and 0.5 mile of fence could be maintained without concern for wilderness values.

Public water reserves of 383 acres would continue to be withdrawn from all public land laws and mining of nonmetalliferous minerals.

In the designated areas wildlife developments would be allowed only if they are compatible with wilderness values. The 600-acre pinyon-juniper chaining and seeding in the southwestern portion of the WSA would not be allowed.

The designated wilderness area would be closed to ORV use. About 3 miles of existing vehicular ways would not be available for vehicular use. About 8 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel.

Visual resources in the wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining acres would be managed as VRM Class II on 910 acres and Class IV on 910 acres, as outlined in the Henry Mountain MFP.

## • Action Scenario

BLM projects that with the Partial Wilderness Alternative no surface disturbance would occur in the foreseeable future. The planned pinyon-juniper woodland chaining and seeding in the southwestern portion of the WSA would not be allowed. No mineral resource exploration or development of existing mining claims or mineral leasing within the WSA is projected.

No disturbance from ORV use is projected because of wilderness management restrictions and terrain.

Primitive recreational use is expected to increase over the current estimated use of 180 visitor days per year at a rate of 2 to 7 percent annually. No motorized recreational use is projected because the 3 miles of vehicular way would be in the designated area and would be unavailable for such use.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

### • Size

This WSA contains 13,620 acres and is approximately 8 miles long and 4 miles wide at the widest point. It is immediately adjacent to the 65,804-acre Mt. Ellen-Blue Hills WSA; the two WSAs are separated only by the gravel Sawmill Basin Road.



# BULL MOUNTAIN WSA

Table 1  
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (13,620 Acres)	Partial Wilderness (11,800 Acres) (Proposed Action)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on up to 600 acres because of a chaining project and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 680 acres. Special features including geologic features and special status plant and animal species would not be significantly affected. The special features that would be affected are Class A scenery which would be reduced in quality on 600 acres and bison which would benefit from the vegetation treatment. Continued vehicular use of ways would be an occasional annoyance that would detract from opportunities for solitude and primitive recreation in the WSA.</p>	<p>Wilderness designation would preserve wilderness values of naturalness; outstanding opportunities for solitude and primitive recreation; and special features including Class A scenery, bristlecone pine, geologic features, special status plant and animal species, and wildlife species associated with wilderness.</p>	<p>Wilderness values would be preserved in the designated area involving approximately 87 percent of the WSA. No disturbance is anticipated in the foreseeable future that would affect wilderness values.</p>
Impacts on Soils	<p>There would be a temporary (2 to 3 year) increase in soil loss from the 600 acres disturbed by chaining and seeding pinyon-juniper woodland. This increase would be approximately 780 cubic yards per year or 8.3 percent above that which now occurs in the WSA.</p>	<p>The soil resource could slightly benefit under the alternative because surface-disturbing activities would be precluded. The 600-acre chaining and seeding and associated short term increases in erosion would not occur.</p>	<p>No surface disturbance is projected with this alternative. Therefore, impacts would be essentially the same as with the All Wilderness Alternative.</p>



# BULL MOUNTAIN WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives	
	No Action/No Wilderness	Partial Wilderness (11,800 Acres) (Proposed Action)
Impacts on Vegetation	Impacts on special status plant species would not be significant. The 600 acres of projected surface disturbance would affect about 10 percent of the pinyon-juniper woodland in the WSA. Therefore, impacts on vegetation types would not be significant.	The vegetation types and special status plant species would be protected by this alternative.
Impacts on Wildlife Habitat and Populations	Impacts on habitat and populations of threatened, endangered, or special status animal species would not be significant because of required mitigation. Implementation of the wildlife and range land projects would provide additional forage and ecotones for many species. Approximately 82 AUMs of additional forage would be provided for bison.	Wildlife populations would be provided with solitude over the entire WSA but the opportunities to provide ecotones and an additional 82 AUMs of bison forage through chaining and seeding of 600 acres of pinyon-juniper woodland would be foregone.
Impacts on Livestock Management	Livestock management and grazing levels would not be affected by this alternative.	Restrictions on vehicle use of 3 miles of ways would cause inconvenience to permittees and increase the costs and time to manage livestock on two allotments.
Impacts on Visual Resources	Approximately 5.6 percent (600 acres) of the Class A scenery in the WSA would be degraded and VRM Class II management objectives would not be met on the disturbed or surrounding areas.	Wilderness designation would preserve the existing scenic values within the WSA.
		Because all 3 miles of ways would be in the designated area, impacts would be about the same as with the All Wilderness Alternative.
		Visual resources in the WSA would be preserved.



# BULL MOUNTAIN WSA

- Naturalness

Most of the WSA is in a natural condition. Imprints of man include 3 miles of way, one spring, 1.25 miles of pipeline, 0.5 mile of fence, and 550 acres of pinyon-juniper chaining and seeding. All of the pinyon-juniper chaining, 1 mile of way, 1 mile of pipeline, and the 0.50 mile of fence are in that portion of the unit which was inadvertently included within the WSA boundary in BLM's 1980 Wilderness Inventory Decision. As a result, 13,060 acres within the WSA meet the naturalness standard set by the Wilderness Act and 560 acres do not meet the standards.

- Solitude

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds. The WSA totals 13,620 acres and consists of steep slopes along Wickiup Ridge leading to Bull Mountain, which tend to concentrate visitor use into travel routes. Several small canyons are found on the eastern side of the WSA. The pinyon-juniper vegetation significantly screens recreationists from each other. There are no outside sights and sounds that would have a significant adverse effect on one's ability to find solitude in the WSA. On Bull Mountain, views of the Henry Mountains and the surrounding deserts also enhance the feeling of solitude. These factors, when considered together, indicate that the quality of the opportunities for finding solitude are outstanding throughout the WSA.

- Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the various recreational opportunities present, and an evaluation of the quality of these opportunities. The entire 13,620-acre WSA was determined, on the basis of quality and diversity, to have outstanding opportunities for primitive, unconfined recreation.

- Special Features

Special features identified in the WSA during the wilderness inventory are geologic and scenic features. The summit of Bull Mountain also provides excellent opportunities for geologic study. Approximately 79 percent (10,790 acres) of the WSA is rated Class A for scenic quality. There are excellent views of the

desert canyon country and the other Henry Mountains from the summit of Bull Mountain. The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There is one animal species (peregrine falcon) and one plant species (Sclerocactus wrightiae) listed as endangered which may occur in the WSA. There are seven animal species and three plant species that are considered sensitive (refer to the Vegetation and Wildlife Including Special Status Species sections for more information). The WSA has bison and cougar which are wildlife species associated with wilderness. A small population of bristlecone pine are found with mixed conifers in the southwestern portion of the WSA.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and Arizona pine forest. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake-Ogden, and Provo-Orem, Utah.

## Air Quality

The Bull Mountain WSA is in a PSD Class II area under the provisions of the Clean Air Act as amended. Capitol Reef National Park, 16 miles west of the WSA, and Canyonlands National Park, 30 miles east, are the nearest Class I areas. Air quality and visibility are generally very good to excellent. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979).

## Geology and Topography

The Bull Mountain WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. In general, this province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments. Bull Mountain is part of the Henry Mountains and is located in the transition zone between the Henry Mountains Basin on the west and the Monument Upwarp on the east.



# BULL MOUNTAIN WSA

Bull Mountain is a satellite intrusion of Mt. Ellen, which is one of five of the Henry Mountain domes formed during emplacement of magma into the upper crust. The structural form of these mountains composes what are known as stocks and laccoliths. At the center of each of the mountain domes is a stock, around which the laccoliths and intrusive bodies are clustered.

The laccoliths were injected radially away from the stocks into the surrounding sedimentary rocks along bedding planes of the more incompetent layers. Bull Mountain is actually referred to as a bysmalith. A bysmalith is almost like a laccolith, with the noted exception that the sedimentary rocks forming the roof of the intrusion were lifted by faulting rather than arching. The sedimentary rocks in the WSA range in age from Jurassic to Cretaceous and consist of the following units, in ascending order: the Carmel, Entrada, Curtis, Summerville, Morrison, Dakota, and Mancos Formations.

They are found on the flanks of Bull Mountain and to the north and east in the flat desert portions of the WSA. In addition to the sedimentary units present in the WSA, there are mid-Tertiary igneous rocks which make up Bull Mountain.

The topography of the WSA is dominated by the Bull Mountain bysmalith. The mountain has extremely steep, rugged sides and is domal in shape. The sides are broken by relatively shallow, but almost vertical, canyons radiating out from the top in all directions. The canyons are separated by almost vertical intervening ridges. Although the mountain drains in all directions, all runoff flows into the Dirty Devil River. The mountain reaches an elevation of 9,187 feet and stands nearly 3,000 feet above the surrounding sedimentary plateau.

## Soils

Soils in the WSA range from high mountain loams and shales to shallow desert sands. Area wide, slopes vary from 2 to 60 percent and average about 20 to 30 percent. Table 2 summarizes the soil erosion condition for the entire WSA. The erosion condition was determined by using soil surface factors (terms are defined in the Glossary).

The soils within this WSA are classified as nonsaline. The annual salt production from undisturbed soils within this WSA is estimated to average only 4 lb per acre.

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	540	4	1,458
Moderate	1.3	4,120	30	5,356
Slight	0.6	4,940	36	2,964
Stable	0.3	640	5	192
Unclassified		<u>3,380</u>	<u>25</u>	<u>Unknown</u>
Total		13,620	100	Exceeds 9,970

Sources: USDI, BLM, 1982c; Leifeste, 1978.

Seeding potential over most of the WSA is poor to unsuitable because of steep slopes and shallow soils. However, there are some areas with gentle slopes and deep soils which are highly suitable for seeding.

## Vegetation Including Special Status Species

The predominant vegetation types in the WSA are pinyon-juniper woodland and shrub-grass. Some mixed conifers occur at the higher elevations. Stands of Ponderosa pine and mixed conifer are found near Dandelion Flat. Existing vegetation types for the WSA are summarized in Table 3.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	5,988	44
Desert shrub	4,248	31
Coniferous forest/aspen	1,772	13
Barren (rock outcrop, badlands)	1,062	8
Crested wheatgrass	<u>550</u>	<u>4</u>
Total	13,620	100

Source: USDI, BLM, 1983b

One endangered plant species, Sclerocactus wrightiae, may occur in the WSA. One Category 1 candidate species and two Category 2 candidate species may also occur in the WSA. These are Pediocactus winckleri (which may be proposed for listing in the near future by FWS), Eriogonum cronquistii, and Spiranthes diluvialis (see Appendix 4 in Volume I).

The Bull Mountain WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 4.



# BULL MOUNTAIN WSA

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	11,500	84
Arizona pine forest	<u>2,120</u>	<u>16</u>
Total	13,620	100

Source: USDI, USGS, 1978.

## Water Resources

The Bull Mountain WSA is within the Dirty Devil River subbasin of the Upper Colorado River hydrologic sub-region.

The WSA contains portions of the watersheds of four streams: Bull Creek, Butler Wash, Crescent Creek, and Granite Creek. The WSA is the recharge recovery area for many springs in the adjacent deserts. There are three springs and no perennial streams in the WSA. The water quality standard for the Dirty Devil River and tributaries, from Lake Powell to the Fremont River is Class 3C (protected for nongame fish and other aquatic life).

Utah's 1986 305(b) Water Quality Assessment Report shows the Dirty Devil River to have impairments to its beneficial uses from high levels of TDS and sodium from the following source categories: agriculture-irrigated cropland and grazing. Springs at higher elevations contain fairly good quality water.

This WSA is within Water Rights Adjudication Area 95. The 95 area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of a 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit. Applications are not being approved within municipalities, but subdivision and some locations above valleys may be approved (UDNRE, DWR, 1988).

There is little potential for wells or underground water use. Generally, underground water sources are saline and not acceptable for human use.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Bull Mountain WSA is given in Table 5. Appendix 5 in Volume I explains the mineral and energy resource rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Copper	f2	c2	Less than 50,000 metric tons
Uranium	f2	c2	Less than 500 metric tons
Coal	f2	c4	Small tonnages
Gold	f2	c2	Less than 100,000 troy ounces
Silver	f2	c2	Less than 500,000 troy ounces

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would occur in only small amounts in the WSA.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA, nor are there any active drilling, mining, or exploration activities for any leasable minerals.

The WSA is considered to have a potential for small, widely scattered oil and gas pools (f2) (less than 10 million barrels of oil or less than 60 billion cubic feet of natural gas) (SAI, 1982). This rating was based primarily on the WSA's location within the Paradox Basin; possible low reservoir pressure due to Cretaceous uplift and subsequent erosion of Paleozoic and Mesozoic rocks along the Monument Upwarp; the presence of Tertiary intrusive bodies within the WSA; possible migration of any hydrocarbons to the Tar Sand Triangle; the general lack of wells in the area; and the lack of oil and gas production in the vicinity of the tract. It is indicated that, even though intrusive bodies are present, hydrocarbons may exist near the intrusions due to the limited metamorphism associated with them. The WSA has a low potential for hydrocarbon accumulations due to the presence of the intrusive bodies (Molenaar, et al., 1982). The WSA is rated as having a low potential for oil and gas resources (USDI, USGS, 1985a). The WSA is located within the Paradox Basin which does have oil and gas production established to the east. Oil accumulations



## BULL MOUNTAIN WSA

are known within the Tar Sand Triangle a few miles to the east of the WSA. It is possible that, if the oil exposed in the Tar Sand Triangle migrated up deep within Pennsylvanian and Permian rocks, it may have been trapped in stratigraphic and structural traps in the vicinity of the WSA. Stratigraphic traps may be associated with algal mound buildups along the western portion of the Paradox Basin. Structural traps may have formed as a result of deformation of strata around the intrusive bodies. Oil and gas accumulations in stratigraphic traps of this nature are difficult to locate but, when they are found, may be expected to yield significant quantities of hydrocarbons. Based on available information, the certainty that hydrocarbons exist is low (c2).

Under the current land use plan, 5,100 acres are in Category 1 (standard stipulations) and 8,520 acres are in Category 2 (special stipulations). There are presently no oil and gas leases in the WSA.

- Coal

The WSA has potential only for thin, discontinuous coal seams and has a rating of f2 (small tonnages). This rating was based on the WSA's location within the Henry Mountains coal field. The Emery and Ferron Sandstone Members of the Cretaceous Mancos Shale are important coal-bearing strata that occur within the coal field. The coal-bearing Emery Sandstone Member has been eroded from within the WSA. The coal-bearing Ferron Sandstone Member, however, intermittently crops out northwest of the WSA; (USDI, USBM, 1984) and in the extreme southern part of the WSA (Patterson, et al., 1984). Sections of coal within the Ferron Sandstone Member, measured by Doelling (1972) at 14 locations near the WSA, show thin, discontinuous coal seams that range in thickness from 0 to 5 feet (USDI, USBM, 1984). Based on these studies, the certainty that small amounts of coal exists within the WSA is high (c4).

- Locatable Minerals

Portions of the area have been thoroughly prospected and studied geologically. There are no known deposits of locatable minerals in the WSA. Approximately 39 mining claims, covering 780 acres are located in the WSA.

- Uranium

The uranium resource potential of the tract is rated as f2 (SAI, 1982). Uranium in the area has been produced primarily from the Henry Mountains mineral belt which lies a few miles east of the WSA. Uranium deposits within the mineral belt are small, averaging 80 tons of mineralized rock each (SAI, 1982). Most uranium potential within the belt is assigned to the Salt Wash Member of the Morrison Formation. This formation is exposed along the eastern portion of the WSA. Even though the WSA does contain this member, it is not thought to be favorable for uranium mineralization in the WSA due to the location of the WSA outside of the identified paleostream channel and the lack of known carbonaceous lacustrine mudstone strata in the area (USDI, USGS, 1985a). No anomalous scintillometer readings above normal background were detected over the Morrison Formation in the WSA (USDI, USBM, 1987). No uranium mines or prospects are known to occur within the WSA (Morton, 1986; USDI, USBM, 1987; and USDI, USGS, 1985a). Uranium is known to occur in mines and prospects in the Salt Wash Member within the Henry Mountains mineral belt a few miles to the east. Uranium occurs in lenticular deposits which are small and discontinuous. The average grade from mines and prospects in the area is approximately 0.26 percent uranium oxide. Due to the fact that the Salt Wash Member is present within the WSA and uranium mines and prospects occur within a few miles of the tract, it is possible that small amounts, less than 500 metric tons of uranium oxide, underlie the WSA. The certainty that uranium is present is low (c2) due to the lack of detected anomalies, the lack of uranium mines and prospects, and the discontinuous nature of uranium deposits in the vicinity.

- Gold, Silver, and Copper

The WSA was rated (f2/c3) for gold, silver, and copper resources (SAI, 1982). This rating is based primarily on the presence of mineralized vein and fissure deposits within the intrusive rocks and shatter zones in Bromide Basin, which lies about 1 mile south of the WSA. Approximately 700 oz of gold, 3,000 oz of silver, and 9 tons of copper have been mined from the area since 1889 (USDI, USBM, 1987c), and the small near-surface deposits are thought to have been mined out (SAI, 1982). The mineralized vein structures



## BULL MOUNTAIN WSA

strike toward the WSA, but no mineralized veins similar to those in Bromide Basin have been found in the WSA (USDI, USGS, 1985a). Stream sediment, panned stream sediment concentrate, and whole rock sample analyses conducted by the USGS and the USBM (USDI, USGS, 1985a) did not indicate the presence of significant metal mineralization within the WSA. Any mineralization would be restricted to the stocks and shatter zones surrounding them within the study area; however, small areas occur in which intrusive rocks are stained with iron oxide. Due to the relatively small past production of gold, silver, and copper from the Bromide Basin area, the WSA is rated as having a potential for small deposits of these metals (f2). The certainty that these metals exist has been lowered to a (c2), due to the lack of Bromide Basin structures extending into the WSA, the lack of anomalous values being detected in samples taken inside the WSA, and the lack of known mineralized areas within the WSA.

- **Gypsum**

A 30-foot-thick gypsum bed crops out within 400 feet of the northern boundary of the WSA. The bed is within the Tidwell Member of the Upper Jurassic Morrison Formation and occurs just below the Salt Wash Member of the Morrison Formation (Patterson, et al., 1985). Distance to markets and availability of gypsum sources closer to markets preclude development of this resource.

- **Salable Minerals**

The only known or possible occurrences of salable minerals in the WSA are deposits of building stone, sand, and gravel. Potential markets are very small, and these deposits are not unique or economically significant due to the presence of ample similar materials outside the WSA.

### **Wildlife Including Special Status Species**

Game animals in the WSA include mule deer, cottontails, chukars, cougar, doves, and band-tailed pigeon. Bison use parts of the WSA. Several furbearers, other small mammals, and birds are found in the WSA. There are no existing wildlife management facilities in the WSA. The WSA contains 4,550 acres of crucial deer summer range and 7,000 acres of crucial bison summer range. Current population estimates are 59 deer and 17 bison. An area of approximately 600 acres in the southwestern portion of the

WSA has potential for chaining and seeding of the pinyon-juniper woodland to improve forage for bison.

One endangered species, the peregrine falcon, and six Category 2 candidate species may occur in the WSA. The candidate species include the Great Basin Silver-spot butterfly, Tanner's black camel cricket, Mt. Ellen chipmunk, Mt. Ellen pocket gopher, ferruginous hawk, and the white-faced ibis (see Appendix 4 in Volume I). The golden eagle, a BLM sensitive species, may also occur in the WSA.

### **Forest Resources**

Scattered pinyon-juniper woodland is found throughout and in areas adjacent to the WSA. There are scattered stands of Ponderosa pine, Douglas fir, aspen, bristlecone pine, and subalpine fir found primarily at Dandelion Flat and on Wickiup Ridge. Small timber volumes and rugged terrain preclude economic harvest. There has been no harvest of this resource in the WSA since the early 1900s. The Henry Mountain MFP recommends no commercial harvest of these species due to the lack of demand and protection of scenic, wildlife, and recreation values. Generally, there are better, more accessible resources closer to potential markets.

### **Livestock and Wild Horses/Burros**

Livestock use is confined to the margins of the WSA because of rugged terrain. No areas within the WSA have been identified for vegetation manipulation projects for livestock. Portions of four allotments are in the WSA. Only two of the four have allocated livestock forage within the WSA. There are an estimated 338 AUMs in the WSA (refer to Table 6). Existing livestock support facilities include one developed spring, 1.25 miles of pipeline, 0.5 mile of fence, and 550 acres of pinyon-juniper chaining and seeding. No additional improvements are proposed.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Bull Mountain WSA (USDA, APHIS, 1988).

No wild horses or burros inhabit this WSA.

### **Visual Resources**

Scenic values are exceptional throughout the majority of the WSA; there is a variety of vegetation and



# BULL MOUNTAIN WSA

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Sawmill Basin	9,247	4,365	166	0	110 Cattle	06/16-08/31	0
Crescent Creek	8,488	2,520	332	145	95 Cattle	06/01-09/15	1
Burr Point	66,050	4,245	3,586	193	437 Cattle 1,520 Sheep	10/16-05/31 10/16-05/31	4
Hanksville	79,759	2,490	6,000	0	670 Cattle 1,185 Sheep	11/01-05/31 10/01-05/05	7
Total	163,544	13,620	10,084	338			12

Sources: BLM File Data.

landforms which contrasts with the surrounding desert. The east side of the WSA is visible from Highway U-95, which has an average daily traffic (ADT) count of 540 vehicles. The west side of the WSA is clearly visible from the Sawmill Basin Road, a secondary travel route which divides the Bull Mountain WSA from the Mt. Ellen-Blue Hills WSA.

The BLM VRM class and scenic quality ratings in the WSA are shown in Table 7, while the VRM system is explained in Appendix 7.

Table 7  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	10,790	79
Scenic Quality Class B	2,830	21
Scenic Quality Class C	0	0
Total	13,620	100
Management Class I	0	0
Management Class II	10,790	79
Management Class III	0	0
Management Class IV	2,830	21
Total	13,620	100

Source: USDI, BLM, 1982c

## Cultural Resources

There are six recorded archaeological sites (primarily campsites) and no recorded historical sites in the WSA (USDI, BLM, 1988).

There are no sites listed in the National Register of Historic Places nor are any known sites eligible for listing. However, the Bull Creek Archaeological District, which is on the National Register of Historic Places, is located immediately north of the WSA. There are 113 recorded sites in this district.

## Recreation

Fifteen recreational opportunities in this WSA were evaluated for their quality. Eleven opportunities are present in varying degrees. A summary of selected activities follows.

Dayhiking opportunities are good because of easy access to a hiking route to the summit of Bull Mountain. Recreationists can also hike down Wickiup Ridge from Wickiup Pass, but vegetation restricts movement. Hiking routes total approximately 9 miles.

General sightseeing opportunities are good due to the excellent views of Mt. Ellen (3 miles west), Sawmill Basin, and the canyons of the Dirty Devil River (12 miles east). Also, one can observe many layers of twisted sedimentary rock on the east side of the WSA.

Except for areas near Dandelion Flat and the southern end of Wickiup Ridge, the topography and size of the WSA restrict overnight camping and backpacking opportunities. The Lonesome Beaver Campground, a developed facility, is located just west of the WSA in Sawmill Basin.

Visitor use is estimated at approximately 200 visitor days annually. Most of this (90 percent) reflects the



## BULL MOUNTAIN WSA

day use the area receives (i.e., a round trip to the Bull Mountain summit takes less than 4 hours).

Due to the presence of bison summer range and other wildlife habitat, this WSA contributes toward hunting opportunities in the Henry Mountain Resource Area. The amount of hunting in the WSA is not known, but the following species account for the listed visitor days related to hunting within the entire Henry Mountain Resource Area: bison (175 days), deer (342 days), and upland game (1,106 days). There is little, if any, ORV use in the area due to the rugged terrain. The 3 miles of existing vehicular ways may occasionally be used for hunting or other types of recreational access and accounts for 10 percent (20 visitor days) of use. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980.

### Land Use Plans

The WSA is BLM-administered public land. There are no State-owned lands in the WSA. However, one State section would be totally enclosed by wilderness if both the Bull Mountain and Mt. Ellen-Blue Hills WSAs were designated wilderness. The Utah State Legislature passed S.C.R. No. 1 in 1986 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of WSAs or wilderness areas. There are no private subsurface rights or rights-of-way on Federal land. Mineral leases and claims are discussed in the Mineral and Energy Resources section.

The Garfield County Master Plan (Five County Association of Governments, 1984) covers the southern 10,120 acres of the WSA. The master plan recognizes that the county possesses "... some of the most spectacular scenery in the United States." The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service (FS) unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Bull Mountain WSA, be retained for multiple uses. The plan's concept of multiple use includes forest resources, livestock grazing, mining, wildlife, and recreation. In spite of the Garfield County Master Plan, the Garfield County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The Wayne County, Final Report, Master Planning Project (Call Engineering, Inc., 1976) does not address this area specifically, but generally recommends that "... open spaces be used for many purposes rather than strictly as wilderness areas." It also states "... outstanding natural landmarks should be preserved as much as possible." The Wayne County Commission has also endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah. About 3,500 acres of the WSA are in Wayne County.

The WSA is managed under the BLM Henry Mountain MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action/No Wilderness Alternative. The Henry Mountains MFP has been reviewed by the Governor of Utah and found to be consistent with State plans. Wilderness is not addressed in the Henry Mountain MFP. However, wilderness designation is part of the BLM multiple-use concept. BLM land use planning is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative.

### Socioeconomics

#### • Demographics

The WSA is located within the boundaries of Wayne and Garfield Counties, two of Utah's least populated and most rural counties. From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 8 presents the baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987, population increased to about 4,085. Population projections for Garfield County indicate that the number of people living in Garfield County in the 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

From 1970 to 1980, the population of Wayne County grew from 1,483 to 1,950, an overall increase of about 31 percent. Table 8 presents the baseline and projected population data for Wayne County. It is estimated that between 1980 and 1987, population increased to about 2,090. Population projections for Wayne County indicate that the number of people living in Wayne County in the year 2010 will be about 2,550 for about a 31-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).



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Table 8  
Baseline and Projected Population and Employment Growth  
Garfield and Wayne Counties

	1980	1990	2000	2010
<b>Garfield</b>				
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200
<b>Wayne</b>				
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.

The closest community to the WSA is Hanksville, a small community of approximately 350 people, located about 21 road miles to the northwest. Green River, about 85 miles north of the WSA in Emery County, is a main gateway and service area for visitors to the Bull Mountain area.

## • Employment

Wayne and Garfield Counties are two of the poorest counties in the State of Utah (South, et al., 1983). Table 8 shows the baseline and projected total employment for Garfield and Wayne Counties to the year 2010.

Garfield County is part of the Southwest MCD. Table 9 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

Table 9  
Southwest Multi-County District  
Employment\*

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	6,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

\*Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

In 1980 the leading employment sectors for the MCD were government (23 percent), trade (20 percent), and nonfarm proprietorship (12 percent). Mining pro-

vided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to 18 percent, and mining will decline to less than 1 percent of the total MCD employment.

Wayne County is part of the Central MCD. Table 10 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

Table 10  
Central Multi-County District  
Employment\*

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, Insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	<u>2,278</u>	<u>2,800</u>	<u>3,300</u>	<u>4,100</u>
Totals	18,400	21,800	25,000	29,000

Source: Utah Office of Planning and Budget, 1987.

\*Includes Juab, Millard, Piute, Sevier, and Wayne Counties.

In 1980 the leading employment sectors for the Central MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will increase by 57 percent. Trade will increase to 12 percent and nonfarm proprietorships to 14 percent of the total. Agriculture will decline to 13 percent, government to 17 percent, and mining will decline one percentage point to 3 percent of the total MCD employment.

## • Sales and Revenues

Economic-related activities in the WSA include limited mineral exploration, livestock production, and recreation. Table 11 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.



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The WSA has 39 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

Table 11  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	None	None
Mining Claim Assessment	\$3,900	None
Livestock Grazing	\$6,760	\$520
Recreational Use	<u>\$820</u>	<u>Unknown<sup>b</sup></u>
Total	\$11,480	\$520

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

<sup>b</sup>A few commercial permits have been issued since 1980.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Five livestock operators have a total grazing privilege of 338 AUMs within the WSA. If all this forage were utilized, it would account for \$6,760 of livestock sales and \$1,690 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. There is little or no motorized recreational use in the WSA. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Bull Mountain WSA is estimated as about 200 visitor days per year.

The WSA generates Federal revenues from mining claims and livestock (refer to Table 11).

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 338 AUMs per year. Based on a \$1.54 per AUM graz-

ing fee, the WSA can potentially generate \$520 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume IV. The following analysis is based on implementation of the Action Scenarios presented in the Description of the Alternatives.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 10,790 acres).

In the foreseeable future, disturbance of approximately 600 acres (4.4 percent of the WSA) from pinyon-juniper chaining would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed area. Special features, including geologic features, bristlecone pine, special status animal species, and wildlife species associated with wilderness, would not be significantly affected because the disturbance would not be located where the special features are located. In addition, appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and these species would not be significantly affected. Refer to the Vegetation and Wildlife Including Special Status Species sections for more information. The proposed chaining would benefit wildlife special features associated with wilderness because increased forage for bison would result. However, Class A scenery would be disturbed and scenic values reduced in quality on the 600 acres.

During the period of activity, the visual and audible disturbance from the vegetation treatments would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 5 percent (680 acres) of the WSA could be so affected



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in the foreseeable future. The areas that would be affected are generally considered by BLM to not have outstanding opportunities for solitude and primitive recreation.

Because future vehicular use would generally be limited by terrain to existing vehicular ways, no additional disturbance from ORV activity is anticipated in the future. Increased vehicular use of 3 miles of existing ways would continue to detract from opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would not be expected to reduce wilderness values because it would be mostly primitive in nature.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on up to 600 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 680 acres. Except for some loss of Class A quality scenery, special features would not be significantly affected.

### • Impacts on Soils

It is estimated that up to 600 acres of soil could be disturbed by chaining and seeding pinyon-juniper woodland. This would cause a temporary (2 or 3 year) increase in soil loss. Assuming that all disturbance would occur in areas with moderate erosion class and that the erosion condition would increase one class, soil loss on the 600 acres would increase from 780 cubic-yards per year to 1,560 cubic-yards per year. Soil loss would decrease as seedlings became established.

Therefore, under this alternative, a temporary (2 to 3 year) increase in maximum annual soil loss would be expected. The increase would be approximately 780 cubic-yards (approximately 8.3 percent) over the current annual soil loss to approximately 9,400 cubic-yards per year. Because these soils are non-saline, no significant increase in salt production would be expected.

Conclusion: There would be a temporary (2 to 3 year) increase in soil loss from the 600 acres disturbed by chaining and seeding pinyon-juniper woodland. Soil loss from the WSA would increase by 8.3 percent and then decline to below present levels.

### • Impacts on Vegetation Including Special Status Species

The 600 acres of surface disturbance projected for the No Action/No Wilderness Alternative would be a 600-acre pinyon-juniper woodland chaining and seeding in the southwestern part of the WSA. As a result of the chaining and seeding, vegetation composition would change from pinyon-juniper woodland to grass-shrub. Approximately 10 percent of the pinyon-juniper woodland in the WSA would be altered. It is projected that the grass-shrub vegetation would be maintained over the foreseeable future. However, once active maintenance ceased, the area would eventually revert back to pinyon-juniper woodland. The chaining and seeding would be designed to improve bison habitat.

The one endangered species, and one Category 1 and two Category 2 candidate species that may occur in the WSA are of restricted distribution, however, habitats extend beyond the WSA boundary. Before authorizing any surface-disturbing activities, BLM would require site-specific clearances of the potentially disturbed areas. If any threatened or endangered plant species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because 600 acres of surface disturbance is projected for the WSA, the potential exists for the inadvertent loss of individual special status plant species. However, because necessary measures would be taken to protect these species, the viability of populations of threatened, endangered, or other special status plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Special status plant species populations would not be significantly impacted. Approximately 10 percent of the pinyon-juniper woodland in the WSA would be altered.

### • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, bison habitat would be improved by chaining and seeding 600 acres of pinyon-juniper woodland in an area identified as crucial bison summer range. Such a chaining, if successful, would provide additional forage (including high-quality forbs) amounting to an estimated 82 AUMs. The



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chaining and seeding would also benefit deer but would be primarily for bison. Assuming that all the increased population of 82 AUMs were used by bison, enough forage would be provided to support an additional nine animals on this range. This would amount to an approximate 50-percent increase over the 17 animals that now use the area.

The extent and use of the WSA by the peregrine falcon, an endangered species, and six other Category 2 candidate species that may occur there is unknown. Chaining would not affect the peregrine falcon because it generally nests in cliff face areas that would not be disturbed. The Great Basin Silverspot butterfly, white-faced ibis, and the Mt. Ellen pocket gopher generally inhabit riparian or wet meadow areas that would not be impaired by the chaining and seeding. Chaining of pinyon-juniper woodland would improve ferruginous hawk habitat by creating ecotones or edges in the woodland. Impacts on the Tanner's black camel cricket and the Mt. Ellen chipmunk are unknown.

BLM would conduct site-specific clearances of the potentially disturbed areas. If any threatened or endangered species are located, consultation with FWS will be initiated as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures such as avoidance of sensitive areas would be implemented. Because necessary measures would be taken to protect these species, potential populations of special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Impacts on habitat and populations of special status animal species would not be significant. Implementation of the wildlife and rangeland projects would benefit wildlife by providing additional forage and ecotones. Approximately 82 AUMs of additional forage would be provided for bison.

### • Impacts on Livestock Management

Present levels of domestic livestock grazing use would continue on the four allotments. Five permits are authorized to graze approximately 338 AUMs on two of the four allotments inside the WSA. The area of the other two allotments inside the WSA are too rough for domestic livestock grazing. There would be no changes in or effect on the current livestock use and management under this alternative. Existing roads and 3 miles of ways would continue to be

used for livestock handling and range projects could be maintained as in the past.

Conclusion: Livestock management and grazing levels would not be affected by the No Action/No Wilderness Alternative.

### • Impacts on Visual Resources

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values (Class A scenery) in areas affected by the estimated 600 acres of surface disturbance from vegetation management would be degraded and VRM Class II management objectives would probably not be met. Although not an irreversible impact, VRM Class II objectives would not be achieved again until maintenance stopped and the area reverted to native vegetation. The 600 acres represents 5.6 percent of the VRM Class II area within the WSA.

Conclusion: Approximately 5.6 percent (600 acres) of the Class A scenery in the WSA would be degraded and VRM Class II management objectives would not be met on the disturbed or surrounding areas.

## All Wilderness Alternative (13,620 Acres)

### • Impacts on Wilderness Values

Designation and management of all 13,620 acres as wilderness would preserve the wilderness values in the Bull Mountain WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved on all 13,060 acres that meet and 560 acres that do not meet the standards for naturalness. Solitude and primitive and unconfined recreation would be preserved on 13,620 acres that meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, geologic features, special status plant and animal species, and wilderness associated wildlife, would also be preserved.

The proposed vegetation treatments would not occur so bison, a wilderness special feature, would not benefit from the additional forage.



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Vehicular use of existing ways would generally cease with ORV closure, improving opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values.

Conclusion: Wilderness designation would preserve the wilderness values of naturalness, outstanding opportunities for solitude and primitive recreation, and special features in the WSA.

- Impacts on Soils

The soil resource could slightly benefit under the All Wilderness Alternative because surface-disturbing activities would be precluded. The 600-acre chaining and seeding would not be allowed.

Conclusion: Soil erosion and loss would continue at present rates.

- Impacts on Vegetation Including Special Status Species

With this alternative, the vegetation resource, including the special status plant species, would be provided with additional protection over the entire area. No surface disturbance is projected, therefore, no impacts to the vegetation resource would occur.

Conclusion: The vegetation types and special status plant species in the WSA would be protected by the All Wilderness Alternative.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative 4,550 acres of crucial deer summer range and 7,000 acres of crucial bison summer range would be protected by the application of the Wilderness Management Policy (BLM Manual 8560) and by the reduced likelihood for surface-disturbance and other activities. However, this alternative would preclude the opportunity for chaining and reseeding as much as 600 acres of pinyon-juniper woodland on crucial deer and bison summer range. A potential for an estimated 82 additional AUMs would be foregone.

Because summer range is considered a limiting factor for mule deer on the Henry Mountains (USDI, BLM 1983b) and vegetation treatments that would enhance the quality of this range would not be allowed, mule

deer numbers on the WSA would be expected to remain at their present low levels under this alternative.

Even though there is sufficient forage in the WSA to meet current bison needs (USDI, BLM 1983b), vegetation treatments would be beneficial to bison. Not only would these treatments provide additional forage, they would also help reduce grazing pressure and forage competition on other crucial bison summer ranges in the area. However, because vegetation treatments enhancing the quality of crucial summer ranges would not be allowed, bison numbers (presently 17) within the WSA would be expected to remain static in the long term under this alternative.

There would be no impacts to threatened, endangered, or other special status animal species with this alternative.

Conclusion: Wildlife populations would be provided with solitude over the entire WSA, but the opportunity to provide additional ecotones and forage through chaining and seeding of 600 acres of pinyon-juniper woodland would be foregone. Impacts on special status species would not be significant.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 338 AUMs currently allocated in the WSA are controlled by five livestock permittees.

Closure of 3 miles of way would cause some changes in livestock management and supervision as they are currently practiced in the WSA. Restrictions on vehicle use would impact general access for hauling salt and project maintenance in the two grazing allotments where grazing use is authorized.

Conclusion: Restriction on vehicle use of 3 miles of way would cause inconvenience for the permittees and increase the cost of livestock management on two allotments in the WSA.

- Impacts on Visual Resources

Wilderness designation would preserve the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only nat-



## BULL MOUNTAIN WSA

ural ecological change), closure of the entire area to ORV use, and future mineral leasing and location.

Conclusion: Wilderness designation would preserve the existing scenic values within the WSA.

### **Partial Wilderness Alternative (Proposed Action) (11,800 Acres)**

- Impacts on Wilderness Values

Wilderness designation of 11,800 acres would contribute to preservation of the area's wilderness values. This Partial Wilderness Alternative would reduce the potential for surface-disturbing activities that could impair wilderness values over the long term in the designated area. Protection in the designated area would include management under VRM Class I (which generally allows for only natural ecological change), ORV closure including closure of 3 miles of ways, and closure to future mineral leasing and location. In the designated area, naturalness, outstanding opportunities for solitude and primitive recreation (all acres that meet the standards of outstanding), and special features, including Class A scenery, bristlecone pine, geologic features, special status species, and wilderness associated wildlife species, would be preserved.

The proposed vegetation treatments would not occur, thus, there would be no loss of naturalness and opportunities for solitude and primitive recreation in the foreseeable future. Bison would not benefit from the additional forage which would be provided by the vegetation treatments.

Elimination of ORV use involving 3 miles of ways in the designated area would improve opportunities for solitude and primitive recreation overall in the WSA.

The gradual increase in visitor use would be largely primitive in nature and would be managed so as to not result in loss of wilderness values.

Conclusion: Wilderness values would be preserved in the designated area which is approximately 87 percent of the WSA. No disturbance that would affect wilderness values is anticipated in the foreseeable future.

- Impacts on Soils

With this alternative, the soil resource could slightly benefit because surface-disturbing activities would be precluded on the designated area. The 600-acre

chaining and seeding would not be allowed. No surface-disturbing activities are planned or projected for the 1,820-acre nondesignated area.

Conclusion: Soil erosion and loss would continue at present levels.

- Impacts on Vegetation Including Special Status Species

No surface disturbance is projected for this alternative in either the designated or nondesignated portions of the WSA in the foreseeable future. Therefore, no impacts would occur to any of the vegetation resources, including special status species, located in the WSA.

Conclusion: Implementation of the All Wilderness Alternative would protect existing vegetation types and special status plant species in the WSA.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

No surface disturbance is projected in either the designated or nondesignated portions of the WSA. The 600-acre vegetation treatment would be precluded resulting in the foregoing of up to 82 AUMs for wildlife. As discussed for the All Wilderness Alternative, critical bison range would receive added protection due to the reduced likelihood for surface-disturbing activities.

There would be no impacts to threatened, endangered, or other special status species with this alternative.

Conclusion: Impacts on special status animal species would not be significant. Wildlife would receive additional protection from potential surface-disturbing activities. The 600-acre vegetation treatment would be precluded and the potential for additional ecotones and an addition of up to 82 AUMs of bison forage would be foregone.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 193 AUMs currently allotted in the designated portion and the estimated 145 AUMs in the nondesignated portion of the WSA would continue to be available for use.



## BULL MOUNTAIN WSA

Three miles of ways would be closed to vehicle use in the designated area and impacts would be essentially the same as with the All Wilderness Alternative.

Conclusion: Restrictions on vehicle use of 3 miles of ways would cause inconvenience for permittees and increase the cost of livestock management on two allotments in the WSA.

- Impacts on Visual Resources

Impacts and conclusions to visual resources would be essentially the same as the All Wilderness Alternative because the 600-acre chaining and seeding would be precluded with this alternative.

Conclusion: Scenic values would be preserved within the WSA.







# Dirty Devil WSA

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Study Area Map in Chapter 2

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Managing Development and Environmental

Management Alternatives

and Scientific Information

All Alternatives Alternative (P)

Summary of Environmental Consequences

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Air Quality

Geology and Seismicity

Fish

Vegetation and Wildlife Values

Water Resources

Mineral and Energy Resources

Wildlife Including Gravel Mining

Forest Resources

Recreation and Public Use

Visual Resources

Recreation

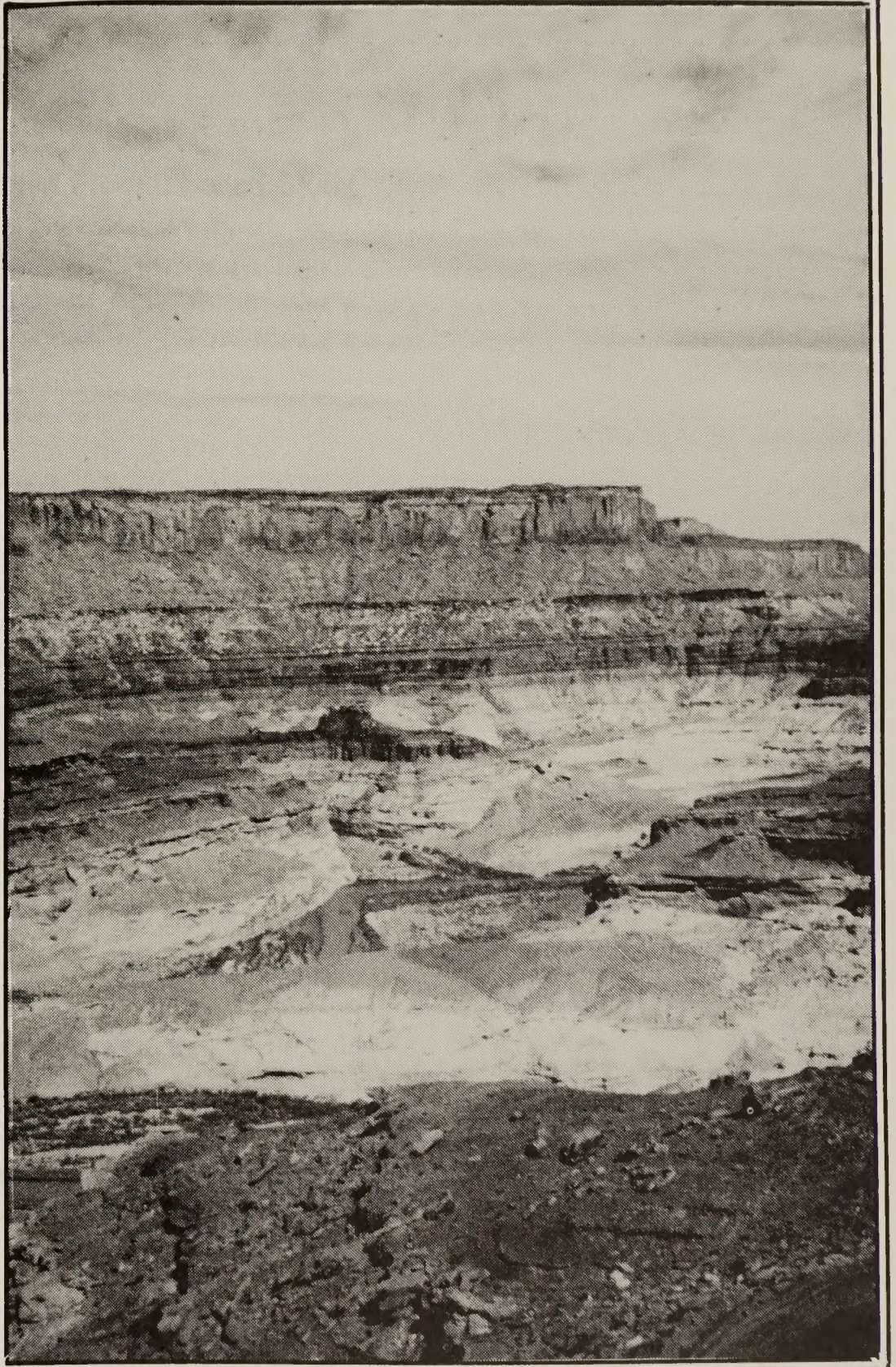
Land Use Plans

Soil Resources

## ENVIRONMENTAL CONSEQUENCES

No Action or Withdrawal Alternative

All Alternatives Alternative (P)









# DIRTY DEVIL WSA

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# DIRTY DEVIL WSA

(UT-050-236A)

## INTRODUCTION

### General Description of the Area

The Dirty Devil WSA consists of 61,000 acres of public land managed by the BLM Richfield District's Henry Mountain Resource Area. It is located in the Canyonlands section of the Colorado Plateau Physiographic Province, approximately 5 miles east of Hanksville, Utah, in Wayne County. In general, this province is characterized by arid and semiarid climate, deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

The geology of the Dirty Devil WSA is dominated by the Navajo Formation, a sedimentary sandstone formation with considerable color variation and a tendency to form sheer cliffs and narrow canyons, depending on various geologic factors. The canyons of the Dirty Devil River are well developed, averaging over 500 feet deep. An extensive network of side canyons, several of which are over 10 miles in length, has also been formed. Sheer cliffs and large rock overhangs are found where water has undermined the rock strata. Rolling slickrock terrain characterizes the benchlands between the side canyons. Other formations include the Moenkopi, Chinle, and Wingate.

Rainfall generally averages less than 10 inches annually, with the greatest precipitation period during summer and early fall. Temperatures can range from under 0 degrees Fahrenheit (F) in the winter to over 100 degrees F in the summer.

The majority of the WSA consists of barren outcrops, with the balance consisting of a variety of desert plants, primarily blackbrush. Other types include pinyon-juniper woodland, nuttall saltbush, and a low-growing oak associated with sand dunes.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. Portions of the boundary of the WSA have been redrawn to correct errors in the Draft EIS maps. These

changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.

2. The anticipated surface disturbance presented in the Draft EIS (194 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 194 acres reported in the Draft EIS to 61 acres of surface disturbance for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies and impacts to water rights), the following issues or impacts specific to the Dirty Devil WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Air Quality: The public has expressed concern that wilderness designation could lead to redesignation of WSAs from the existing Class II, PSD classification, to the more stringent Class I rating. A PSD Class I area could restrict future industrial developments in the area of the Dirty Devil WSA. Since the BLM Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not

STATEWIDE  
POCKET MAP  
WSA  
NO. **38**  
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## DIRTY DEVIL WSA

cause the air quality classification to change. The decision to change air quality classification is the prerogative of the State of Utah, rather than BLM. In addition, the anticipated activities in the Dirty Devil WSA are small and would meet the constraints of PSD Class II guidelines. Therefore, impacts on air quality are not analyzed in detail for the Dirty Devil WSA.

2. Geology and Topography: The public has expressed concern that only wilderness designation can adequately protect geologic and topographic features of the WSAs. The only potential threats to these features would be blasting and surface mining on a scale much larger than any projects anticipated for the Dirty Devil WSA. Therefore, impacts on geologic or topographic features are not significant issues for the Dirty Devil WSA.

3. Soils: The public is concerned that without wilderness designation, mineral development, land treatment, or ORV use would occur on soils that are not easily reclaimed, leading to unacceptable increases in soil erosion. Within the foreseeable future, the anticipated surface disturbance from mineral developments in the Dirty Devil WSA without wilderness designation would be 61 acres and mitigation would be required through the unnecessary and undue degradation requirements of 43 CFR 3809. Terrain and surface features generally restrict vehicles to existing ways and 58,440 acres of the 61,000-acre WSA are already administratively closed to ORV use. Therefore, impacts on soil erosion are not significant issues for the Dirty Devil WSA.

4. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 194 acres reported in the Draft EIS to 61 acres of surface disturbance in the Final EIS. Seventy percent of the WSA is bare rock and sand. Given these conditions, the impacts of direct disturbance of vegetation would not be significant with any of the alternatives on less than 0.1 percent (61 acres) of the WSA. There are no special status plant species known to occur within the WSA. In any event, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on threatened or endangered plant species. Therefore, impacts on vegetation are not analyzed in detail for the Dirty Devil WSA.

5. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral or other developments would destroy wildlife

habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Dirty Devil WSA provides habitat for a variety of animal species, but populations are low and no one species can be described as abundant. Two endangered and four sensitive species may be found in the WSA. Desert bighorn sheep transplants are proposed by UDWR near the WSA and could be carried out with any of the alternatives.

Because only 61 acres of disturbance are expected in the WSA in the foreseeable future, significant wildlife habitats would not be lost. Terrain, surface features, and the BLM land use plan restrict the use of ORVs in the WSA. Recreation use is very low (estimated 125 visitor days use per year) and is mostly primitive. Given these conditions, BLM does not believe that potential impacts on wildlife habitat and populations are significant issues for the Final EIS.

6. Forest Resources: The only forest resources in the WSA are small scattered patches of pinyon pine and juniper trees. Demand is low and there is limited access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

7. Visual Resources: As discussed above for vegetation, only 61 acres of surface disturbance (0.1 percent of the WSA) are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values sections.

8. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, only eight cultural resource sites have been recorded in the Dirty Devil WSA. Only 61 acres of surface disturbance (0.1 percent of the WSA) is projected. Visitation is light (125 visitor days per year) and mainly primitive. Terrain, surface features, and the BLM land use plan eliminate vehicle use from 95 percent (57,950 acres) of the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to any surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for the Dirty Devil WSA.

9. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that



# DIRTY DEVIL WSA

without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the Dirty Devil WSA is light (estimated 125 visitor days per year), and would remain primitive with or without wilderness designation due to the terrain of the WSA, limited access, and closure to ORV use by the Henry Mountain MFP. Therefore, impacts on recreation use would not be significant and they are not analyzed in detail in the Final EIS. Impacts on primitive recreation opportunities are analyzed as part of the analysis of impacts on wilderness values.

## • Issues Analyzed in Detail

The significant issues for the Dirty Devil WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on water resources, including ground-water quality and future uses of water in the Dirty Devil River system.
3. Impacts on mineral and energy exploration and production.
4. Impacts on livestock management, including ability of operators to use mechanized equipment for movement and management of livestock.
5. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS included:

1. Inadequacies of the BLM wilderness inventory.
2. Support for inclusion of State lands in the wilderness study.
3. Inconsistency in the BLM Proposed Actions for the Dirty Devil and French Spring-Happy Canyon WSAs.
4. The need for additional maps.
5. Opposition to tar sand development in the Tar Sand Triangle.
6. Inadequacies in the vegetation and wildlife sections.

7. The need to address potential effects on water uses and salinity in the Colorado River system.

8. Support for merging the Dirty Devil and French Spring-Happy Canyon WSAs with National Park lands.

9. BLM's underestimation of the conflicts between wilderness and livestock grazing.

10. New information on hydroelectric power potential in the WSA.

11. Questions on BLM's mineral resource ratings.

12. Questions on BLM's ratings of wilderness values.

13. Statements on the position of the Six County Commissioners Organization relative to designation of the Dirty Devil WSA.

See Volume VII-B for responses to general comments applicable to all WSAs and /or the Statewide analysis, and Volume VII-C, Section 38, for responses to specific comments about the Dirty Devil WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated From Detailed Study

An alternative that would combine the Dirty Devil and French Spring-Happy Canyon WSAs along with 83,000 acres of State, BLM, and National Park lands outside the WSA was suggested during the public comment period. This alternative is not analyzed in detail because the inclusion of State lands would not be consistent with the BLM wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4), other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1), and the National Park lands were part of the National Park Service (NPS) wilderness inventory and were not recommended as suitable for wilderness.

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (61,000 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each



case. The assumed management actions presented in the Introduction to Volume IV are also applicable.

- No Action/No Wilderness Alternative

With this alternative, none of the 61,000-acre Dirty Devil WSA would be designated as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c). The 2554.8 acres of State land within the area have not been identified in the MFP for Federal acquisition through exchange or purchase (refer to Map 1). There are no private or split-estate lands located within the WSA. Acreage figures and quantities in this analysis are for Federal lands only.

- Management Conditions and Constraints

Thirteen existing post-FLPMA leases (11,250 acres) and future leases could be developed with leasing Category 1 (standard stipulations) on 9,020 acres and Category 2 (standard and special stipulations) on 50,540 acres. About 1,440 acres (part of Beaver Wash Canyon ACEC) would be Category 4 (no leasing). The entire area would remain open to mineral leasing and sale except for the 1,440 acres closed in Beaver Wash Canyon. Development work, extraction, and possible patent would be allowed on 218 existing claims (4,360 acres) and future mining claims.

Because of the moderate certainty (c3) that uranium is within the WSA, it is projected that uranium exploration would occur in this area in the short term and that development could occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 366 AUMs of allocated forage in the WSA would continue to be allocated to three permittees. Allotments would be available for motorized access for support of livestock management. New rangeland improvements could be implemented without wilderness considerations, although none are presently planned.

In the long term, wells could be drilled or a diversion and pumping station could be built along the Dirty Devil River within the WSA to produce water for use in the tar sand development on the Tar Sand Triangle STSA, adjacent to the Dirty Devil WSA. However, water could also be produced from wells or diversions outside the WSA.

Planned UDWR bighorn sheep transplants would be allowed under this alternative.

Approximately 58,440 acres (including 18 miles of existing vehicular ways) would be closed to ORV use except for (1) users with valid existing rights, if approved by BLM in accordance with 43 CFR 8560 or (2) occasional or short-term vehicular access for maintenance of developments. The remaining 2,560 acres would be open to vehicular use.

The existing recreational trail to Angels Point would be maintained by any necessary means.

Approximately 58,440 acres would be closed to forest product harvest. The remainder of the WSA (2,560 acres) would remain open to forest product harvest. However, there is no harvest of forest products at the present time, nor is any expected because of low production, low demand, and the lack of access.

The area would continue to be managed under VRM Class II on 58,440 acres and Class IV on 2,560 acres.

Beaver Wash Canyon would continue to be designated as an ACEC and would be managed according to the management plan for Beaver Wash Canyon to protect the biological values in the area. Approximately 3,660 acres of the 4,800-acre ACEC are in the WSA.

- Action Scenario

It is projected that implementation of the No Action/No Wilderness Alternative would result in approximately 61 acres of surface disturbance in the foreseeable future.

Approximately 55 acres would be disturbed by uranium exploration activities. While the mining claims on which this disturbance could occur are scattered throughout the WSA, actual disturbance would most likely be in the more accessible



# DIRTY DEVIL WSA

R. 12 E.

R. 13 E.

R. 14 E.

T. 28 S.

T. 29 S.

T. 30 S.

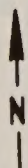
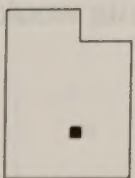
T. 31 S.



**Map 1**  
**LAND STATUS**  
**Dirty Devil WSA**  
**UT-050-236A**

## Legend

- WSA Boundary
- Beaver Wash Canyon ACEC Boundary
- State Land Within or Adjacent to WSA
- BLM Administered Land Within or Adjacent to WSA



SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS



## DIRTY DEVIL WSA

drainages and side canyons. Disturbance would include construction of up to 15 miles of access roads and small drill pads adjacent to the roads. Based on exploration activities typical of the area, it is assumed that 44 employees and 110 days would be used in exploration activities in the short term. Exploration would be under the unnecessary and undue guidelines of 43 CFR 3809. It is further assumed that each drill site would be reclaimed following abandonment. Three to 5 years would be necessary for successful reclamation. No leasable mineral exploration or development is projected because of low resource potential and likelihood of development. No rangeland, wildlife habitat, watershed projects, or other developments are planned in the short term. In the long term, a water diversion or series of wells could be installed inside the WSA to supply water for tar sand development on the adjacent Tar Sand Triangle. The number of locations of such developments are unknown.

It is projected that about 6 acres of surface disturbance would result from 3 miles of access road construction to four State sections located in the WSA (T. 29 S., R. 13 E., secs. 16 and 36; T. 29 S., R. 14 E., sec. 32; and T. 30 S., R. 13 E., sec. 2). These access roads would be for the purpose of exploring for mineral resources on the State land.

Over the long term, mineral resource exploration and development could occur. Uranium is the most likely resource that would be developed in the long term. If developed, it is projected that two to three shafts and accompanying mine dumps would be built along roads used for exploration purposes. Disturbance would likely be in the same areas disturbed by exploration activities.

No disturbance from ORV use is projected because of present management restrictions, topographic constraints, and remoteness of the area.

Recreational use is expected to increase over the current estimated use of 125 visitor days per year at a rate of 2 to 7 percent annually. There is currently little or no motorized recreational use occurring in the WSA.

- All Wilderness Alternative (Proposed Action)

With the All Wilderness Alternative (refer to Map 2), all 61,000 acres of the Dirty Devil WSA would be des-

ignated by an act of Congress as part of the NWPS. The WSA would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands it is assumed that State lands, would remain under existing ownership. There are four State sections (2,554.8 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management conditions and Constraints

All 61,000 acres would be withdrawn from mineral location and closed to mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on any of the 218 existing mining claims (4,360 acres) determined to be valid. Development of these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness consideration (43 CFR 3809). Because of moderate certainty (c3) that uranium is within the WSA, it is projected that uranium exploration would occur in this area in the short term and that development would occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption. After designation, 13 existing post-FLPMA oil and gas leases, involving about 11,250 acres, would be phased out upon expiration unless an oil or gas find in commercial quantities is shown. It is assumed that oil and gas would not be developed following wilderness designation because of low resource potential and wilderness protection requirements.

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 366 AUMs would remain available to livestock as presently allotted. No rangeland improvements exist in this WSA and none are planned.

Planned UDWR bighorn sheep transplants would be allowed under this alternative.



# DIRTY DEVIL WSA

R. 12 E.

R. 13 E.

R. 14 E.

T. 28 S.



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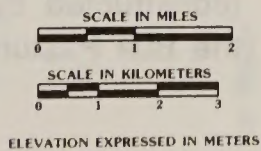
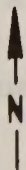
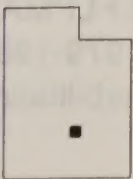
T. 30 S.

T. 31 S.

**Map 2**  
**ALL WILDERNESS ALTERNATIVE**  
**Dirty Devil WSA**  
**UT-050-236A**

**Legend**

-  All Wilderness Alternative (61,000 acres)
-  Beaver Wash Canyon ACEC Boundary





## DIRTY DEVIL WSA

The entire WSA would be closed to ORV use, except to those users with valid existing rights, if approved by BLM in accordance with 43 CFR 8560. About 18 miles of existing vehicular ways would continue to be unavailable for vehicular use.

The existing recreational trail to Angels Point would be maintained but by nonmechanical means.

Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness.

- **Action Scenario**

A total of 22 acres would be disturbed in the short term. Locatable mineral exploration work would be restricted to existing, valid mining claims at the time of wilderness designation. Such claims may occur in the WSA, therefore, it is projected that 16 acres of disturbance would result from locatable mineral-related activities as discussed in the No Action/No Wilderness Alternative, except on a more limited basis. Up to 4 miles of access roads would be constructed. It is assumed that 20 employees and 50 days would be used for exploration activities in the foreseeable future. Exploration operations would be developed under the unnecessary and undue guidelines of the 43 CFR 3809 regulations. About 6 acres of surface disturbance would result from road construction to in-held State sections as discussed in the No Action/No Wilderness Alternative. Should development occur in the long term, disturbance would likely be in the same areas disturbed by exploration activities.

Areas not under valid mining claim at the time of wilderness designation would be closed to further mineral location. The WSA would also be closed to mineral leasing. Therefore, no leasable mineral exploration or development would occur. No range-land, wildlife habitat, or watershed projects are planned following wilderness designation. Wells or diversion structures for tar sand development water would not be allowed because of wilderness protection guidelines.

No disturbance due to ORV use is projected because of wilderness management restrictions,

topographic constraints, and remoteness of the area.

Primitive recreational use is expected to increase over the current estimated use of 125 visitor days per year at a rate of 2 to 7 percent annually.

### **Summary of Environmental Consequences**

Table 1 presents environmental consequences of alternatives analyzed in detail.

### **AFFECTED ENVIRONMENT**

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

#### **Wilderness Values**

- **Size**

This WSA contains 61,000 acres. It extends along the meandering Dirty Devil River for approximately 19 miles (northwest to southeast) and is up to 10 miles wide. The boundary encompasses several side canyons, thus creating a highly irregular border (refer to Map 1).

- **Naturalness**

All of the Dirty Devil WSA is in a natural condition. Although there are approximately 18 miles of post-FLPMA vehicular ways with numerous drill pad sites in the southern end of the WSA along the Dirty Devil River and in Sams Box Mesa and Twin Corral Canyons, these disturbances were assessed as being substantially unnoticeable at the time of the inventory. These disturbances are noticeable from the air (Burr Point and other selected locations) but are not visible from the Dirty Devil River. They are in the process of natural rehabilitation. A 12-mile post-FLPMA road (constructed by Cotter Corporation in 1979-1980) in the Bull Pasture area is successfully rehabilitating by



# DIRTY DEVIL WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
Impacts on Wilderness Values	<p>Wilderness values would not be preserved by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 61 acres because of uranium exploration and development and construction of roads to in-held State lands, and indirectly reduced in quality on up to 30,500 acres. Some special features, including petrified wood, cultural values, special status species, and wildlife associated with wilderness, would not be significantly affected. Class A scenery would be reduced in quality in the disturbed areas. Long-term changes of water flow in the Dirty Devil River would significantly reduce the quality of opportunities for primitive recreation.</p>
Impacts on Water Resources	<p>In the long term, tar sand development on the adjacent Tar Sand Triangle STSA and potential extraction of water from the WSA would reduce the quality of groundwater, reduce the flow in the Dirty Devil River, reduce the salinity in the Colorado River, and compete with other potential consumptive water uses in the Dirty Devil River system.</p>
Impacts on Mineral and Energy Exploration and Production	<p>Implementation of this alternative would not adversely affect mineral exploration or production because mineral leasing and mining claim location would continue and developments could be completed without wilderness protection measures.</p>
Impacts on Livestock Management	<p>This alternative would not adversely affect livestock management in the WSA because management techniques and access would remain as at present.</p>
Impacts on Economic Conditions	<p>Existing and potential future economic conditions would not be affected. Major economic developments requiring consumptive water use would not be affected.</p>

All Wilderness  
(61,000 Acres)  
(Proposed Action)

Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be lost on 22 acres because of uranium exploration and development and construction of roads to in-held State lands, and would be indirectly reduced in quality on up to an additional 9,760 acres. Special features, including Class A scenery, cultural values, petrified wood, special status species, wildlife associated with wilderness, and perennial waters including the Dirty Devil River, would be preserved overall. Class A scenery would be reduced in quality in the disturbed areas.

In the long term, groundwater quality could be affected by tar sand development outside the WSA. Existing water rights and uses would not be affected, but future water diversions and new consumptive uses in the Dirty Devil River system upstream of the WSA in Sevier, Wayne, Garfield, and Emery Counties may be hampered or restricted in order to protect wilderness values in the WSA.

The potential for production of an unknown amount of uranium oxide would be foregone.

Restrictions on access would result in inconvenience and slight increases in management costs to three permittees.

In the long term, major beneficial or adverse impacts on economic conditions from uranium development or water consumptive projects upstream of the WSA on the Dirty Devil River may not occur.



# DIRTY DEVIL WSA

natural and artificial means and is substantially unnoticeable. No other surface disturbances have occurred and naturalness has not been affected since the BLM's Intensive Wilderness Inventory (USDI, BLM, 1980). Therefore, the entire 61,000-acre WSA is free of substantially noticeable intrusions.

- Solitude

This WSA's large size and numerous deep (300 to 800 feet), steep-walled, twisting canyons offer outstanding opportunities for solitude. On mesas where topography is relatively flat and vegetation is limited to low-growing grasses, shrubs, and a few scattered trees, opportunities for solitude are less than outstanding. The low recreational use of the area enhances opportunities for solitude. The overall quality for solitude meets the standards set by the Wilderness Act on 49,000 acres. Opportunities on the remaining 12,000 acres do not meet the standards.

- Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, recreational opportunities present, and an evaluation of the quality of these opportunities. The Dirty Devil WSA has diverse recreational opportunities, many of which are of outstanding quality. These opportunities include hiking, backpacking, horseback riding, photography, nature study, camping, scenic sightseeing, and viewing of geologic formations and archaeological structures. Numerous travel/hiking routes (totaling over 100 miles) allow for extended trips. There are many camping opportunities in the canyons where rock overhangs offer shelter. The slickrock areas offer excellent, colorful sightseeing and photography opportunities. Present recreational use is low due to the remote location and limited accessibility.

Overall, the BLM Intensive Wilderness Inventory (USDI, BLM, 1980) found that opportunities for primitive and unconfined recreation meet the standards set by the Wilderness Act on 49,000 acres and did not meet the standards on 12,000 acres.

- Special Features

Several special features are found in the WSA. There are beaver colonies in Beaver Wash Canyon which have constructed dams from desert woody plants (i.e., pinyon and juniper trees, sagebrush, etc.). There are deposits of petrified wood in several can-

yons. Rock art is found in Robbers Roost Canyon. Generally spectacular canyon scenery including ephemeral waterfalls in places is present throughout the WSA. Robbers Roost Canyon is reputed to have been one of the major hideouts of the famous outlaw, Butch Cassidy. The diversity and uniqueness of these features give the WSA exceptional special features.

The endangered peregrine falcon and black-footed ferret may occur in the WSA. In addition, there are six animal species that are considered sensitive (FWS candidate or BLM sensitive) (see Appendix 4 in Volume I). The WSA may have desert bighorn sheep, which is a species associated with wilderness. Refer to the Wildlife Including Special Status Species section for additional information. Approximately 96 percent (58,440 acres) of the WSA is rated Class A for scenic quality. The Dirty Devil River, a Nationwide Wild and Scenic Inventory river segment, is the major perennial water source in the WSA. Approximately 30 miles of the river flow through the WSA.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation section for more discussion on ecoregions and PNV types. The ecoregion and PNV type represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, and Provo-Orem, Utah.

## Air Quality

This WSA is classified as a PSD Class II area under the provisions of the Clean Air Act, as amended, and is affected little by air pollution. Visual quality is excellent, with an average visual range from 90 to 130 miles. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979). Canyonlands National Park (6 miles to the east) is the nearest PSD Class I area.

## Geology and Topography

The Dirty Devil WSA is in the Canyonlands section of the Colorado Plateau Physiographic Province. The WSA is situated on the northwest flank of the gently dipping Monument Upwarp and is bordered on the



# DIRTY DEVIL WSA

northwest by the steeply dipping east flank of the San Rafael Swell; both uplifts are north-trending monoclines.

The stratigraphic units exposed within the WSA consist of the following formations (in ascending order): Moenkopi, Chinle, Wingate, Kayenta, and Navajo Sandstone. These strata range in age from early Triassic to middle Jurassic.

Structurally, the area is quite stable with only six minor faults. The faults are normal with displacement between 100 and 200 feet, all trending in a northwest direction. The largest of these faults can be traced no further than 7 or 8 miles.

The strata within the WSA are sedimentary in nature and were deposited in shallow tidal-flat conditions on broad floodplains in sluggish streams and backwater lakes, point bar and channel deposits, and large eolian Sahara-like dunes.

This WSA varies in elevation from about 4,000 to 4,800 feet. The topography consists of high plateaus and mesas cut by deep, steep-walled canyons, averaging over 500 feet in depth.

## Soils

Most of the WSA is made up of sandstone outcrops. The higher desert mesas have shallow to deep sandy soils, with some river wash soils along the Dirty Devil River. Approximately 75 percent (45,750 acres) of the WSA is in a critical erosion condition. Virtually all erosion is caused by natural geologic forces. Table 2 summarizes the soil erosion condition in the WSA.

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	45,750	75	123,525
Moderate	1.3	6,100	10	7,930
Slight	0.6	6,100	10	3,660
Stable	0.3	<u>3,050</u>	<u>5</u>	<u>915</u>
Total		61,000	100	136,030

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

Sediment yields vary from moderate to high. Soil salinity class estimates range from nonsaline to

moderate with an estimated average salinity production of 84 lb of salt per acre per year.

Over 90 percent (54,900 acres) of the Dirty Devil WSA is judged to be unsuitable for seeding because of the barren or nearly barren sandstone rock outcrops. The remaining 10 percent (6,100 acres) is rated poor to very poor because of limited precipitation, and in some cases shallow, sandy (droughty) soils. The best soils in the WSA are in the southeastern corner.

## Vegetation Including Special Status Species

About 70 percent (42,700 acres) of the WSA is composed of barren rock outcrops or sand which contains little or no vegetation. The remainder of the WSA consists of a variety of warm desert shrub communities. The vegetation is transitional between that of the Lower Sonoran Zone and the Upper Sonoran Zone (Neese, 1981). These communities occupy canyon bottoms, floodplains, slickrock, and sand deserts below 5,000 feet (Neese, 1981). The dominant plant species is blackbrush. Other vegetation includes pinyon pine, juniper, nuttall saltbush, and low-growing oak associated with sand dunes. The WSA also contains small, isolated hanging-garden type vegetation. These gardens can be found on moist cliffs and in alcoves in Glen Canyon and in tributary canyons (Neese, 1981). Representative plant species include Eastwood monkey flower, maidenhair fern, Colorado columbine, and giant helle-borine (Neese, 1981). Riparian vegetation is restricted to stream channels and water bottoms such as along the Dirty Devil River. Beaver Wash Canyon provides an outstanding example of riparian vegetation in a cold desert ecosystem; however, it occupies a small acreage and is not listed separately in Table 3. No threatened, endangered, or other special status plant species are known to occur in the WSA (see Appendix 4 in Volume I). Table 3 summarizes existing vegetation types in the WSA.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Barren (rock outcrop, badlands)	42,700	70
Blackbrush	11,590	19
Desert shrubs	<u>6,710</u>	<u>11</u>
Total	61,000	100

Source: USDI, BLM, 1983b

The Dirty Devil WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler



ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

## Water Resources

The Dirty Devil WSA is within the Dirty Devil River subbasin of the Upper Colorado River hydrologic sub-region.

The Dirty Devil River is the primary water source and the major perennial stream (totaling approximately 30 miles within the WSA). There are up to 15 springs in the WSA; a few of these produce water year-round. These are located in the side canyons which drain into the Dirty Devil River. The springs and seeps in the WSA are not mapped and have not been sampled to determine quality or quantity.

The potential for flash floods in the WSA is very high, especially during the summer and early fall.

This WSA is in Water Rights Adjudication Area 95. The 95 area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit. Temporary and fixed time applications over 0.015 cfs on the Dirty Devil River could be considered (UDNRE, DWR, 1988).

There are no improved wells in this WSA. There is one improved well (Jeffery Well) which is close to the boundary. This well is producing water from the Navajo sandstone. Therefore, the potential for wells and underground water within the WSA does exist. The water-bearing aquifer in this area is the Navajo sandstone. The general area has aquifers capable of producing 5 to 50 gallons per minute of fairly high quality water with the TDS ranging from 250 to 1,000 parts per million (ppm) (Guisti, 1977). The water quality standard for the Dirty Devil River and tributaries from Lake Powell to Fremont River are Class 3C (protected for nongame fish and other aquatic life).

Utah's 1986 305(b) Water Quality Assessment Report shows the Dirty Devil River to have impairments to its beneficial uses from high levels of TDS and sodium from probable source categories of natural sources, agriculture-irrigated cropland, and grazing.

Present and potential uses of Muddy Creek, a tributary to the Dirty Devil River, include irrigation, cooling water for coal fired generation of electricity,

coal mining, and municipal use in Emery County. Another tributary, the Fremont River, provides irrigation water to Wayne County. A reservoir has been proposed for the Fremont River upstream of the WSA by the Wayne County Water Conservancy District for hydroelectric generation and irrigation.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Dirty Devil WSA is given in Table 4. Refer to Appendix 5 in Volume I for a description of the mineral and energy resource rating system.

Table 4  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Tar Sand	f2	c4	Less than 500 million barrels (oil)
Copper	f2	c2	Less than 50,000 metric tons
Uranium	f2	c3	Less than 500 metric tons
Gold	f1	c3	Little to none
Silver	f1	c3	Little to none

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would occur in only small amounts in the WSA.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA, nor are there any active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin (which has oil and gas production established to the east), the presence of the Monument Upwarp



(a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them), the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle, and the lack of any oil and gas production established from any of the oil and gas wells drilled in the area. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic-feet of gas (f2).

The WSA is rated as having a moderate potential for hydrocarbon accumulations in stratigraphic and structural traps within Mississippian and Pennsylvanian rocks (Molenaar, et al., 1983). According to the USGS, the area has a moderate potential for oil and gas based on reported oil shows in 14 of the 36 wells drilled in the vicinity of the WSA that they studied (USDI, USGS, 1985a).

The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. The WSA lies in an area within the basin where Pennsylvanian and Permian sedimentary facies change to carbonate from basinal shales and evaporates. This facies change is favorable for the formation of stratigraphic hydrocarbon traps. In addition, due to the WSA's position within the Paradox Basin, where the basin changes from a penesaline facies to carbonate shelf facies, the possibility exists for bioherm and oolite shoal buildups within Mississippian and Pennsylvanian rocks. It is possible that as oil accumulated and moved through the rocks within the basin, it may have become pooled within these stratigraphic traps. Evidence suggests oil impregnated rock within the Tar Sand Triangle.

Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to contain 3 to 5 million barrels of oil each, an average of 40 to 80 acres in size in the eastern portion of the Paradox Basin.

Several exploration wells have been drilled within or near the southwestern portion of the WSA. Most of these wells have been drilled to the Mississippian and Pennsylvanian aged strata. Oil shows, and oolitic and fossiliferous strata were

encountered in a few of these wells. All wells were plugged and abandoned, however.

Based on the available information, the certainty of occurrence for oil and gas is rated low (c2). The certainty that these small scattered accumulations exist in the area is low to moderate based upon the WSA's location within the Paradox Basin and the limited number and extent of oil shows within or near the WSA.

Under the current land use plan, 9,020 acres are in Category 1 (standard stipulations), 50,540 acres are in Category 2 (special stipulations), and 1,440 acres are in Category 4 (closed to leasing). There are presently 13 post-FLPMA oil and gas leases covering 11,250 acres.

## • Tar Sand

About 20 acres of the WSA is located in the Tar Sand Triangle STSA. The Dirty Devil WSA is not underlain by oil impregnated rock within the White Rim Sandstone Member off the Cutler Formation (as defined by the 0-foot isopach map of the tar sand net by zone). Therefore, there are no oil reserves from the tar sand resource within the Dirty Devil WSA. Using the criteria presented by SAI (1982), the tar sand resource potential is rated as (f2/c4).

## • Locatable Minerals

Portions of the area have been prospected and studied geologically. There are no known deposits of locatable minerals in the WSA. Approximately 218 mining claims exist, covering 4,360 acres.

## • Uranium

The principle uranium-bearing strata in the vicinity of the WSA is the Triassic Chinle Formation, specifically the Shinarump and the Mossback Members. The Shinarump, however, is not present within the WSA and the Mossback facies present is a blanket-like deposit and not conducive to uranium mineralization. The Monitor Butte Member of the Chinle Formation is present and is favorable for uranium mineralization for several reasons. It is of an irregularly lithologic character representative of paleostream channels and it contains interfingering carbonaceous mudstone and sandstone and authigenic dolomite (USDI, USGS,



1985a; USDI, USBM, 1984c). The Monitor Butte Member underlies essentially all of the WSA.

Anomalous radioactive areas were found within the WSA. These areas are associated with local carbonized and silicified wood and plant material. Uranium ore from mines and prospects in the vicinity of the WSA ranged from a trace to 0.087 percent uranium (USDI, USBM, 1984c). Approximately 65 uranium exploration holes were drilled in the southern portion of the WSA by the Cotter Corporation. Low grade uranium mineralization in a paleochannel trunk feeder system was encountered in the Monitor Butte Member in the Gibex Point area. The mineralization represents a resource of approximately 39,000 tons of 0.04 percent uranium dioxide (USDI, USBM, 1984b). USGS (1985) rated those areas within the WSA which are underlain by authigenic dolomite, carbonaceous mudstone, and the fluvial systems as having a moderate potential for uranium mineralization. One area such as this has been identified and there is potential for other similar deposits of this type to exist within the WSA. Due to the identified uranium resource and potential for other such deposits, the tract is favorable for the occurrence of up to 500 tons of uranium oxide (f2). The certainty that uranium exists within the tract is moderate (c3), even though no producing mines are present within or near the WSA.

- Other Locatable Minerals

Stream sediment and panned concentrate stream sediment samples showed evidence of isolated mineral occurrences of gold, silver, lead, copper, and molybdenum (USDI, USGS, 1985a; USDI, USBM, 1984c). No mineralized areas containing these elements were found however. The rocks exposed in the tract are all sedimentary in nature and, with the exception of copper, have a low potential of occurrence for these resources. Copper is commonly found in association with uranium in the area and was reported in the sampling program conducted by the USGS and USBM. The potential for these resources, excluding copper, to exist within the WSA is very low with a moderate degree of certainty (f1/c3). Copper may exist in small quantities in association with uranium within the WSA (f2), but the certainty that it does exist is low (c2).

- Salable Minerals

The only possible salable minerals in the WSA are sand and gravel. Potential markets are very small and there are available sources of supply closer than those found in the WSA.

- Hydroelectric Power Potential

The Dirty Devil River through the WSA has the potential to produce small amounts of hydroelectric power. A dam on the river could produce .04 megawatts 95 percent of the time (Clyde, et al., 1979). Because of the small power potential and the Nationwide Wild and Scenic River Inventory status of the Dirty Devil River, construction of a dam and production of hydroelectric power are unlikely in the foreseeable future.

## Wildlife Including Special Status Species

Several species of wildlife may be found in the WSA. These include mule deer, antelope, fox, coyote, and badger, as well as a few species of birds. The area contains about 3 percent of the habitat for Deer Herd Unit 29. This herd unit covers the San Rafael Desert but deer are principally found along the river bottoms, especially the Price River, all of which are outside the WSA (UDNRE, DWR, 1975 and 1977).

The area also provides less than 25 percent of substantial value habitat for Antelope Herd Unit 9. This herd is widely scattered and distribution is limited by the availability of water (UDNRE, DWR, 1982). Pronghorn antelope need up to 1.2 gallons of water per animal per day during the peak of summer (Salwasser, 1980). Also, most pronghorn antelope are found within 4 miles of a water source.

UDWR introduced desert bighorn sheep onto the nearby Orange Cliffs in 1982. The WSA contains approximately 15,000 acres of habitat for this species. The distribution of water is the greatest limiting factor for this species (Monson and Sumner, 1980). Additional transplants of bighorn sheep are planned for this area.

As previously stated, there are approximately 15 springs in the WSA but the amount of water present is unknown. Beaver Wash Canyon (a side drainage to the Dirty Devil River) contains a perennial stream and riparian habitat which supports several colonies of beaver. Mule deer, pronghorn antelope, and bighorn



sheep populations would probably be distributed near the Dirty Devil River and in Beaver Wash Canyon.

Two endangered species may inhabit the area, the black-footed ferret and the peregrine falcon. Four Category 2 candidate species, Tanner's black camel cricket, Great Basin Silverspot butterfly, ferruginous hawk, and white-faced ibis, may also frequent the area (see Appendix 4 in Volume I). These species have not actually been sighted in the WSA. The Bell's vireo and the golden eagle (a BLM sensitive species) may occasionally be seen in the WSA. There is no critical habitat in the WSA, although the cliffs along the Dirty Devil River could provide excellent nesting sites for the endangered peregrine falcon.

There are no existing wildlife management facilities in the WSA and none are planned.

## Forest Resources

Forest resources are limited to areas of widely scattered pinyon-juniper woodland on some of the mesas; most of the area is bare rock and sand. Due to the remote location of the WSA, difficulty of access, lack of demand (no known harvest), and general absence of trees, forest resources are not significant in the WSA.

## Livestock and Wild Horses/Burros

This WSA includes parts of five BLM grazing allotments (refer to Table 5). Two of these allotments (Burr Point and Hanksville) are unsuitable for grazing within the WSA due to slickrock topography and low forage production. Areas east of the Dirty Devil River are in the Robbers Roost, Jeffery Well, and Pasture Canyon Allotments. Approximately 70 percent of the available AUMs in the Pasture Canyon Allotment are obtained inside the WSA permitting the three allotments east of the Dirty Devil River an undetermined amount of use of the 18 miles of ways in the WSA for livestock management.

There are no existing or proposed rangeland improvements in the WSA. No areas have been identified as having vegetation manipulation potential to increase AUMs. The estimated 366 AUMs of livestock forage now permitted represent 1 percent of the total AUMs for the allotments involved.

No wild horses or burros have been sighted within the WSA. Feral goats have been sighted in the Burr Point Allotment. Census data or information concerning distribution or migration patterns of these animals in this WSA are not available.

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Robbers Roost	159,420	38,770	5,288	128	440 Cattle 20 Horses	yearlong	1
Burr Point	74,711	7,860	3,586	0*	437 Cattle	10/16-05/31	4
Hanksville	90,654	2,845	6,000	0*	670 Cattle	09/01-05/31	7
Jeffery Well	81,535	2,610	2,800	90	402 Cattle	10/17-05/15	1
Pasture Canyon	43,178	8,915	208	148	32 Cattle	10/01-04/15	1
Total	449,498	61,000	17,882	366			14

Sources: BLM File Data.

\*Unallotted on the portion of the allotment inside the WSA.



## Visual Resources

Scenic quality is outstanding throughout the WSA. Sheer Navajo Sandstone cliffs, colorful rock formations, highly eroded side canyons (slickrock outcrops), riparian vegetation along the Dirty Devil River and Beaver Wash Canyon, and unique erosional patterns all contribute to the strong visual character of the area.

The area is not visible from any highway travel routes, but is visible from a major hiking route along the Dirty Devil River and from scenic overlooks at Angels Point and Burr Point. Both overlooks are accessible by dirt road.

The BLM Visual Resource Evaluation System rated the WSA's visual characteristics as shown in Table 6. Appendix 7 in Volume I explains the BLM VRM system.

Table 6  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	58,440	96
Scenic Quality Class B	0	0
Scenic Quality Class C	2,560	4
Total	61,000	100
Management Class I	0	0
Management Class II	58,440	96
Management Class III	0	0
Management Class IV	2,560	4
Total	61,000	100

Source: USDI, BLM, 1982c

## Cultural Resources

A total of eight sites have been recorded in the WSA (USDI, BLM, 1988a). Four of these sites are lithic scatters and one of them is associated with a midden. The cultural affiliation of these sites is unknown. Three of the sites are petroglyph panels of the Barrier Canyon style and are associated with the Fremont archaeological culture. These sites are eligible for nomination to the National Register of Historic Places. The remaining recorded site is a set of historic Euro-American signatures dating from 1918 on a sandstone canyon wall.

Historically, the area is associated with Butch Cassidy and the Wild Bunch as well as other famous outlaws. Robbers Roost Canyon served as a major hide-out on the Outlaw Trail which stretched from Montana

to New Mexico. Robbers Roost which consists of remains of a cabin used by various outlaws from 1875 to 1905 is located on the eastern boundary of the WSA. This structure and some associated features have been nominated to the National Register of Historic Places.

A 1977 inventory for BLM's previous Under the Ledges Planning Unit consists of a 1-percent sample survey. Two randomly selected 160-acre survey quadrants comprising approximately 0.5 percent of the unit were located within the boundaries of the WSA. One site was identified within one of the quadrants. Using figures from this inventory, an estimated site density of approximately 72 sites per 23,000 acres was computed for the WSA. The survey sample size is quite small and not specifically designed for the WSA, hence, statistics based on it may be unreliable. However, the potential for finding additional sites in the unit is probably high.

## Recreation

Fifteen recreational opportunities (backpacking; camping, dayhiking, fishing, horseback riding, hunting, nature study, photography, rock climbing, rock hounding, skiing; and archaeological, geological, wildlife, and scenic sightseeing) were evaluated for their quality in this WSA. Thirteen opportunities (all but skiing and fishing) were present in varying degrees. Eight opportunities were considered outstanding in quality (backpacking, camping, horseback riding, nature study, photography; and archaeological, geological, and scenic sightseeing). The remaining five activities are of average or lower quality. Three of these activities (i.e., dayhiking, hunting, and wildlife sightseeing) are fair to average. Rockclimbing and rock-hounding are considered poor.

Overnight backpacking and camping opportunities are considered excellent due to the large size of the area and the diversity of natural features present. Trips of up to a week or more in duration and 50 miles in length are possible. Numerous side canyons add interest and variety and allow for general exploring.

The main canyon of the Dirty Devil River is ideally suited for horseback trips. Quality dayhiking areas are present but a lack of easy access points restricts opportunities. Activities such as photography, nature study, and sightseeing are enhanced by the colorful rock formations, riparian habitat along the Dirty Devil River and Beaver Wash Canyon, and the presence of cultural sites.



An additional activity, river running, is possible on a seasonal basis when water flow is high. While no data on participation in this activity are collected, it is believed that use is light (less than 20 parties per year). The Dirty Devil River from Lake Powell to Highway U-24 is a Nationwide Wild and Scenic River Inventory segment (USDI, NPS, 1982). Thus, it is eligible for study for addition to the Nationwide Wild and Scenic Rivers system. The inventory found that this segment of the river (including the WSA portion) possesses remarkably outstanding scenic, geologic, wildlife, and cultural values. Since it is an inventory-listed segment, the BLM must (as a part of its environmental review process) avoid or mitigate adverse impacts to the river and consult with the National Park Service (NPS) before taking any action which could foreclose wild, scenic, or recreational river status (CEQ, 1980).

Even though there are 18 miles of vehicular ways within the WSA, they are in a 58,440-acre portion of the WSA presently closed to ORV use. There is little ORV use in the remainder of the WSA due to topographic restraints.

Present total recreation use is estimated at approximately 125 visitor days per year. The area is also used by organized outdoor groups for extended trips on an irregular basis and by commercial outfitters. The magnitude of commercial use is low and related to primitive recreational uses (i.e., backpacking and river running).

## Land Use Plans

There are no private in-holdings, rights-of-way, or private subsurface rights within the WSA. However, there are four State sections (2,554.8 acres) within the WSA. The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. The in-held State sections are leased for oil, gas, and hydrocarbons. No activities are presently occurring on these sections. One section (635.8 acres) is leased for grazing.

The WSA is entirely within Wayne County. The Final Report, Wayne County Master Planning Project (Call Engineering, 1976) does not identify recommendations at specific locations. The plan recognizes that

"... outstanding natural landmarks should be preserved as much as possible." However, it also states that "Open spaces should be used for many purposes rather than strictly as wilderness areas." The Wayne County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah. The Wayne County Water Conservancy District is planning to construct a reservoir on the Fremont River, upstream of the WSA.

The WSA is managed under the BLM Henry Mountain MFP which allows multiple uses with certain restrictions on surface occupancy for oil and gas, ORV use, and closure of a large area to harvest of forest products as described in the No Action/No Wilderness Alternative. The MFP has been reviewed by the Governor of Utah and found to be consistent with State plans. Wilderness is not addressed in the MFP. However, wilderness designation is part of the BLM multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative. The Beaver Wash Canyon is an ACEC designated to protect the beaver colonies and riparian vegetation in the canyon. Approximately 3,660 acres of the 4,800-acre ACEC are in the Dirty Devil WSA.

## Socioeconomics

### • Demographics

The WSA is in Wayne County, one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Wayne County grew from 1,483 to 1,950, an overall increase of about 31 percent. Table 7 presents baseline and projected population data for Wayne County. It is estimated that between 1980 and 1987, population increased to about 2,090. Population projections for the county indicate that the number of people living in Wayne County in the year 2010 will be about 2,550 for about a 31-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 7  
Baseline and Projected Population and Employment Growth  
Wayne County

	1980	1990	2000	2010
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.



The closest community to the WSA is Hanksville, a small community of approximately 350 people, located about 11 road miles to the west.

## • Employment

Wayne County is among the counties with the lowest average personal income in the State of Utah (South, et al., 1983). Table 7 shows the baseline and projected total employment for Wayne County to the year 2010.

Wayne County is part of the Central MCD. Table 8 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980, the leading employment sectors for the Central MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the MCD.

Table 8  
Central Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, Insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	2,278	2,800	3,300	4,100
<b>Totals</b>	<b>18,400</b>	<b>21,800</b>	<b>25,000</b>	<b>29,000</b>

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Juab, Millard, Piute, Sevier, and Wayne Counties.

It is projected that by the year 2010, employment in the MCD will increase by 57 percent. Trade will increase to 17 percent, and nonfarm proprietors to 14 percent of the total. Agriculture will decline to 13 percent of the total, government to 17 percent of the total, and mining will decline 1 percentage point to 3 percent of the total MCD employment.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, mineral production, livestock production, and recreation. Table 9 summarizes local sales and Federal revenues from the WSA. Appendix 9 in

Volume I identifies the multipliers used to estimate sales and revenues.

The WSA has 218 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Only a portion of the claims are current in assessment work. Occasional geophysical exploration has been conducted in the WSA and has generated some temporary local employment and income. No exploration activities are presently occurring in the WSA.

Table 9  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	None	\$22,500
Mining Claim Assessment	\$21,800	None
Livestock Grazing	\$7,320	\$564
Recreational Use	<u>\$513</u>	<u>Unknown</u>
<b>Total</b>	<b>\$29,633</b>	<b>\$23,064</b>

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

Three livestock operators have a total grazing privilege of 366 AUMs within the WSA. If all this forage were utilized, it would account for \$7,320 of livestock sales and \$1,830 of ranchers' returns to labor and investment.

The WSA's recreational use is low, and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses, except to the commercial outfitters who use the WSA. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). The Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Dirty Devil WSA is estimated at about 125 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Wayne County.

The WSA generates Federal revenues from mineral leases and claims, livestock, and recreation (refer to Table 9).

Oil and gas leases in the WSA cover approximately 11,250 acres. At \$2 per acre, lease rental fees



generate up to \$22,500 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 366 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$564 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

An unknown number of user day permits per year are issued for commercial use. Federal permit fees are \$1 per user day. Recreation permits generate a small amount of Federal revenue annually.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume IV and the Description of the Alternatives for the Dirty Devil WSA.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 58,440 acres) management under oil and gas leasing Category 4 [closed to leasing] on 1,440 acres, and ORV closure limitations on 58,440 acres).

In the foreseeable future, disturbance of approximately 61 acres from uranium exploration and access road development to State in-holdings throughout the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Some special features including petrified wood, cultural values, endangered and sensitive species, and wildlife associated

with wilderness would not be significantly affected because the disturbance would involve only 0.10 percent (61 acres) of the WSA. In addition, appropriate measures would be taken to protect petrified wood, cultural values, and special status species prior to any surface-disturbing activity. Class A scenery would be reduced in quality in disturbed and surrounding areas.

During the period of activity, the visual and audible disturbance from uranium exploration would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 50 percent (30,500 acres) of the WSA could be so affected in the foreseeable future.

Future vehicular use would generally be restricted by terrain and ORV closures, and little or no additional disturbance from ORV activity is anticipated in the future.

The gradual increase in visitor use that would occur would not be expected to reduce wilderness values because the additional use is expected to be largely primitive in nature and the WSA is large enough to adequately incorporate the additional use.

Long-term disturbance that could occur from additional uranium exploration and possible uranium development and from development of wells for tar sand extraction and, therefore, the long-term loss of wilderness values that would occur, is not accurately known. Loss would occur, however, as intrusions increase. Long-term change of water flows of the Dirty Devil River due to upstream uses and diversions for tar sand development on nearby areas could be significant. Reduction in flows would reduce opportunities for recreation on the river. Refer to the Water Resources analysis.

Conclusion: Wilderness values would not be protected by wilderness designation. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 61 acres, and opportunities for solitude and primitive recreation would be indirectly reduced in quality during the period of activity on up to 30,500 acres. Class A scenery would be reduced in quality in disturbed and surrounding areas. Over the long term, there could be a significant change in flow of the Dirty Devil River, affecting opportunities for primitive recreation.



- Impacts on Water Resources

Uranium exploration and road construction in the area would be at or near the surface or with widely spaced drilling and would not significantly impact groundwater quality.

In-situ tar sand injection activities on adjacent areas would lower the quality of groundwater within the WSA. The water requirement for tar sand development in the Tar Sand Triangle STSA adjacent to the WSA, would be 11,000 acre-feet per year for 100 or more years (USDI, NPS and BLM, 1984). Development of groundwater or diversion of surface water could occur within the WSA to help meet water requirements for tar sand production on adjacent areas.

Diversion of about 11,000 acre-feet of water per year from the Dirty Devil River would reduce the average annual flow of the river by approximately 22 percent. Use of groundwater would affect spring flows and ultimately reduce flows in the river, but by a smaller amount. Because the Dirty Devil River is high in salinity (1,500 to 2,000 milligrams per liter), reduction in flows would actually remove several thousand tons of salt from the Colorado River system (USDI, NPS and BLM, 1984). However, reduction in flows would reduce opportunities for rafting or recreation on the river.

A reservoir proposed by the Wayne County Water Conservancy District for the Fremont River upstream of the WSA could be built and operated without consideration of instream flows through the WSA. Storage of water in a reservoir during peak flow periods could eliminate opportunities for canoeing and float boating through the WSA.

Commitment of water for use in tar sand oil extraction over long periods of time may conflict with upstream development for other consumptive uses of water such as coal mining, powerplant cooling, and agriculture. Any reductions in the flow of springs in the vicinity of the Tar Sand Triangle could reduce the availability of water for livestock and wildlife. The degree of reduction in spring flows is unknown.

Conclusion: In the long term, tar sand development on the adjacent Tar Sand Triangle STSA and potential extraction of water from the WSA would reduce the quality of groundwater, reduce salinity in the Colorado River, reduce the flow of the Dirty Devil River, and compete with other potential consumptive water uses in the Dirty Devil River system.

- Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 366 AUMs currently allocated in the WSA are controlled by three livestock permittees. There are no existing or proposed rangeland improvements in the WSA. Motorized vehicle use for management of livestock in the WSA in a few areas on the northern edge of Pasture Canyon and Jeffery Well Allotments would continue without wilderness protection requirements.

Conclusion: The No Action/No Wilderness Alternative would not adversely affect livestock management in the WSA.

- Impacts on Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. Potential water consumptive projects upstream of the WSA in the Dirty Devil River basin, including coal mining, electric power generation, irrigation, and municipal use of a reservoir proposed on the Fremont River, could proceed without wilderness considerations. These projects would be major economic developments in Wayne, Sevier, Garfield, and Emery Counties.

A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy.

There would be no livestock-related economic losses because the existing grazing use (estimated 366 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$7,320 annually in livestock sales and \$1,820 of ranchers' return to labor and investment.



Recreational use and, therefore, recreation-related local expenditures would not be affected because recreational use would remain primitive in nature due to restrictions on the use of vehicles by the land use plan and terrain.

Federal and State revenues would not be reduced by this alternative because leasing and location of minerals would not be affected.

Collection of livestock grazing fees (\$564 per year) would continue. Commercial recreation permits would continue to produce an undetermined amount of Federal fee revenues. Overall, there could be an increase in Federal oil and gas and recreation permit fee revenues of more than \$96,620 per year with this alternative.

**Conclusion:** Existing and potential future economic conditions would not be significantly affected. Major economic developments requiring consumptive water use would not be affected.

## **All Wilderness Alternative (Proposed Action) (61,000 Acres)**

### **• Impacts on Wilderness Values**

Designation and management of all 61,000 acres as wilderness would contribute to the preservation of the wilderness values in the Dirty Devil WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 61,000 acres. Opportunities for solitude and primitive recreation would be protected on approximately 49,000 acres that meet and 12,000 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, petrified wood, cultural values, special status species, wildlife associated with wilderness, and perennial water values, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of the existence of valid existing rights. In the foreseeable future, disturbance of up to 22 acres is anticipated from exploration of valid mining claims and from providing access to State in-holdings. The disturbance is anticipated to occur in places throughout the WSA. Wilderness values of naturalness and opportunities

for solitude and primitive recreation would be directly lost on the disturbed areas at least until activities and noise cease and reclamation is complete. Opportunities for solitude and primitive recreation would also be indirectly reduced on adjacent portions of the WSA during the period of activity. As much as 16 percent (9,760 acres) of the WSA could be so affected. Special features would not be affected because the direct disturbance would involve only 0.04 percent (22 acres) of the WSA and the disturbance would not be located where the special features are located. In addition, appropriate measures would be taken to protect cultural and special status species prior to any surface-disturbing activity, and it can be assumed that no negative impact would occur to these values. Class A scenery would be reduced in quality in the disturbed areas. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. All in all, the disturbance would probably not be substantially noticeable in the area as a whole.

Over the long term, there would be no potential for loss of wilderness values from development of new leases and mining claims. The potential for long-term development of existing uranium claims and State in-holdings is not known but would be less with this alternative than with No Action/No Wilderness due to the application of mitigation that would protect wilderness values subject to valid existing rights. Wells for tar sand development would not be built in the WSA, and the flow of the Dirty Devil River would not be reduced by upstream diversions. Refer to the Water Resource section.

The gradual increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in the loss of wilderness values.

**Conclusion:** Wilderness designation would preserve wilderness values overall in the WSA. Because of valid existing rights, naturalness and opportunities for solitude and primitive recreation would be directly lost on 22 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 9,760 acres. Class A scenery would be reduced in quality in the disturbed and surrounding areas. Wild and scenic values of the Dirty Devil River would be preserved.



# DIRTY DEVIL WSA

- Impacts on Water Resources

Restrictions to protect wilderness values could prevent the development of some additional water in the WSA.

Uranium exploration and access road construction would be confined at or near the surface or with widely spaced drilling and would not significantly impact groundwater quantity or quality. The water requirement for a tar sand industry to extract the tar sand from the entire Tar Sand Triangle STSA is estimated to be about 11,000 acre-feet per year for 100 or more years (USDI, NPS and BLM, 1984). Potential for development of groundwater or diversion of surface water from the Dirty Devil River within the WSA to help meet water requirements for tar sand development on adjacent areas would be foregone. In-situ tar sand development in areas adjacent to the WSA could, over time, lower the quality of the groundwater in this WSA. The degree of groundwater contamination is unknown.

Development in the Dirty Devil River system including the Fremont River (from its headwaters on the Fish Lake National Forest through Sevier, Wayne, and Garfield Counties) and Muddy Creek (from its headwaters on the Manti-Lasal National Forest through Emery County) would be hampered because changes in use, changes in points of diversion, or transfer of water rights could be protested by the Federal government to maintain flow through the WSA. Potential uses of water upstream of the WSA include diversions from the headwaters of Muddy Creek for coal mining on the Wasatch Plateau, diversions and transfers of water rights for coal-fired powerplants in Emery County, construction of a reservoir on the Fremont River in Wayne County for irrigation and hydroelectric power generation, diversions for municipal water and irrigation in Sevier, Emery, and Wayne Counties; and diversions for tar sand development in Wayne and Garfield Counties.

Conclusion: In the long term, groundwater quality could be affected by tar sand development outside the WSA. Future water diversions and new consumptive uses in the Dirty Devil River system upstream of the WSA in Sevier, Wayne, Garfield, and Emery Counties may be hampered or restricted.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

Approximately 11,250 acres of post-FLPMA oil and gas leases are located in the WSA.

If the area were designated wilderness, it would be placed in a Category 4 status (no leasing) with no new leasing. However, the post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing.

Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of recoverable oil and gas.

Approximately 20 acres of the WSA are part of the Tar Sand Triangle STSA. However, there are no recoverable tar sand deposits expected in the WSA. Therefore, wilderness designation would not directly affect in-situ tar sand development activities. However, water development for tar sand operations outside the WSA could be affected.

- Locatable Minerals

There are approximately 218 mining claims (primarily for uranium) that cover about 4,360 acres of the WSA. Claims can be located up to the time of designation. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. Less than 500 metric tons of uranium oxide are estimated to occur in the WSA. Exploration for uranium is likely in the foreseeable future even if the area is designated as wilderness. However, if locatable minerals, including uranium, are not within claims filed prior to designation, the potential for recovery would be foregone. Therefore, with wilderness designation, the potential to recover an unknown amount of uranium would be foregone over the long term.

- Salable Minerals

Salable mineral development would not be allowed. Because of the remoteness of the area and difficulty in access, salable minerals would not be



developed in any case. Therefore, the loss of salable mineral production potential would not be significant.

Conclusion: The potential for production of an unknown amount of uranium oxide would be foregone.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 366 AUMs currently allocated within the WSA are controlled by three livestock permittees. There are no existing or proposed rangeland improvements in the WSA and there are no areas identified as having potential for increased forage through vegetation manipulation. Use of motorized vehicles in livestock management would be controlled, which would increase the time required for livestock management and consequently increase management costs and be an inconvenience to permittees.

There has not been any predator control for several years in the portions of the allotments that are within the WSA. Therefore, restrictions on predator control would not affect livestock management.

Conclusion: Access would be somewhat restricted causing inconvenience and increased management costs for three livestock operators.

- Impacts on Economic Conditions

Overall, there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 9), as well as loss of potential increases in income and Federal revenues that could occur with the No Action/No Wilderness Alternative.

The potential for mineral and energy development (with the exception of uranium) in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Mining claims could be developed but designation would preclude new claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what

they would be with mineral development under the No Action/No Wilderness Alternative. With the exception of uranium, locatable mineral development is low and it is estimated that potential locatable mineral-related local income would not be significantly reduced by wilderness designation. In addition, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue approximately as at present.

Recreation and related local expenditures would be small (average of \$4.10 per visitor day Statewide) and would only be significant to the commercial outfitters now using the WSA and potential wilderness users.

Phasing out of 11,250 acres now leased for oil and gas would cause an eventual loss of up to \$22,500 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$96,620 annually in Federal revenues from the 49,310 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

An estimated annual \$564 of Federal grazing fee revenues would continue.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. The number of commercial outfitters using the WSA is unknown, but designation could lead to more commercial recreational use in the WSA.

Conclusion: In the long term, major beneficial or adverse impacts on economic conditions related to uranium development or water consumptive projects upstream of the WSA on the Dirty Devil River may not occur.







# Horseshoe Canyon (South) WSA



## Overview and Area Administration

Area Overview

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Recreation Policy

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Background and Alternatives

Environmental Impacts

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Small Scale Alternatives Analysis (22,700 Acres)







# HORSESHOE CANYON (SOUTH) WSA

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# HORSESHOE CANYON (SOUTH) WSA

(UT-050-237)

## INTRODUCTION

### General Description of the Area

The Horseshoe Canyon (South) WSA consists of 38,800 acres of public land about 24 miles east of Hanksville in northeastern Wayne County. The WSA is west of the Glen Canyon National Recreation Area (NRA). The area contains a series of deep, slickrock canyons separated by sparsely vegetated benches that converge near the Horseshoe Canyon Detached Unit of Canyonlands National Park (contiguous with the WSA).

Summer temperatures can be over 95 degrees Fahrenheit (F) at the bottom of Horseshoe Canyon. Winter temperatures can fall below 0 degrees F. Precipitation averages about 6 inches in the bottom of Horseshoe Canyon to about 10 inches on the higher bench areas.

The WSA is located in the upper end of a 35-mile-long canyon. There are two other management designations for the other portions of the canyon: the Horseshoe Canyon Detached Unit of Canyonlands National Park and the Horseshoe Canyon (North) WSA of the BLM Moab District. The combined total acreage of the three contiguous areas is almost 62,000 acres. A road on the southern boundary separates this WSA from the French Spring-Happy Canyon WSA. The Glen Canyon NRA borders portions of the eastern boundary of the WSA.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the WSA have been redrawn to correct errors in the Draft EIS maps. These changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS. These changes were made in T. 27 S., R. 15 E., sec. 33; T. 29 S., R. 15 E., sec. 9; and T. 27 S., R. 16 E., secs. 30 and 31 and portray the boundaries as shown in the BLM inventory documents.

2. The anticipated surface disturbance presented in the Draft EIS (240 acres) was based on the assumption

that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 240 acres reported in the Draft EIS to 38 acres of surface disturbance for the Final EIS. The analysis of environmental consequences has been revised accordingly.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies and impacts on water rights), the following issues or impacts specific to the Horseshoe Canyon (South) WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Air Quality: The public has expressed concern that wilderness designation could lead to redesignation of WSAs from the existing Class II, PSD classification, to the more stringent Class I rating. A PSD Class I area could restrict future industrial developments in the Horseshoe Canyon (South) WSA and surrounding areas to the west of the WSA. Since the BLM Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not cause the air quality classification to change. The decision to change the air quality classification is the prerogative of the State of Utah, rather than BLM. In addition, the anticipated activities in the Horseshoe Canyon (South) WSA are small and would meet the constraints of Class II PSD guidelines. Therefore, the

STATEWIDE  
POCKET MAP  
WSA  
NO. **39**  
SEE VOL. I



## HORSESHOE CANYON (SOUTH) WSA

impacts on air quality are not analyzed in detail for the Horseshoe Canyon (South) WSA.

2. Geology and Topography: The public has expressed concern that only wilderness designation can adequately protect geologic and topographic features of WSAs. The only potential threats to these features would be blasting and surface mining on a scale much larger than any projects anticipated for the Horseshoe Canyon (South) WSA. Therefore, impacts on geologic or topographic features are not significant issues for the Horseshoe Canyon (South) WSA.

3. Soils: The public is concerned that without wilderness designation, mineral development, land treatment, or ORV use would occur on soils that are not easily reclaimed, leading to unacceptable increases in soil erosion. Within the foreseeable future, the anticipated surface disturbance from mineral developments in the Horseshoe Canyon (South) WSA without wilderness designation would be 20 acres and mitigation would be required as per lease stipulations. Terrain and surface features restrict vehicles to existing ways in most of the WSA, and there is little or no ORV use in the WSA at present. Soil erosion is not a significant issue for the Horseshoe Canyon (South) WSA.

4. Vegetation Including Special Status Species: Estimates of surface disturbance without wilderness designation have been revised downward from the 240 acres reported in the Draft EIS to only 38 acres of surface disturbance in the Final EIS. Thirty-five percent (13,580 acres) of the WSA is bare rock and sand. Given these conditions, the impacts of direct disturbance of vegetation would not be significant with any of the alternatives (less than 0.1 percent of the WSA). There are no threatened, endangered, or other special status plant species known to occur within the WSA. In any event, BLM would conduct site-specific clearances of potentially disturbed areas and consult with the FWS concerning impacts on threatened or endangered plant species. Therefore, impacts on vegetation are not analyzed in detail for the Horseshoe Canyon (South) WSA.

5. Water Resources: There are no perennial streams in the WSA. All of the springs already have user claims, and no spring developments or major water development projects are proposed. Projected surface disturbance is small and increases in soil erosion into surface waters would not be significant. Therefore, impacts on water uses and quality are not significant for the Horseshoe Canyon (South) WSA and

they are not discussed in detail in the Final EIS. Future development of three proposed reservoirs for livestock would probably not be allowed with wilderness designation. This conflict is analyzed as part of the analysis of Impacts on Livestock Management.

6. Wildlife Including Special Status Species: The public is concerned that without wilderness designation mineral and other developments would destroy wildlife habitat and lead to reductions in wildlife populations. They are also concerned that use of ORVs would disturb wildlife and destroy habitat. The Horseshoe Canyon (South) WSA provides habitat for a variety of animal species, but populations are low and no one species can be described as abundant. Two endangered and four sensitive species may be found in the WSA. Desert bighorn sheep transplants are proposed by UDWR in and near the WSA and would be carried out with any of the alternatives.

Because only 38 acres of disturbance are expected in the WSA in the foreseeable future, significant wildlife habitats would not be lost. Terrain and surface features restrict the use of ORVs to 23 miles of way in the WSA. Recreation use is low (estimated at 100 visitor days use per year) and is primitive. Given these conditions, impacts on wildlife habitat, populations, or special status species are not significant issues for the Final EIS.

7. Forest Resources: The only forest resources in the WSA are poor quality and low quantities of pinyon pine and juniper trees. Demand is low and there is limited access. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

8. Wild Burros: Wild burros would remain in the WSA with or without wilderness designation. No major disturbance or changes in habitat are projected. Burros are managed by horseback in the area. Therefore, impacts on wild burros are not analyzed in detail in the Final EIS.

9. Visual Resources: Only 38 acres of surface disturbance (less than 0.1 percent of the WSA) are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values sections.



## HORSESHOE CANYON (SOUTH) WSA

10. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. Thirty-three cultural resource sites have been recorded in the Horseshoe Canyon (South) WSA, and there is a high potential for additional sites. Only 38 acres of surface disturbance (less than 0.1 percent of the WSA) is projected. Terrain and surface features and the presence of other available riding areas limit use to little or none in the WSA. Additionally, inventories for the purpose of site recordation and mitigation of impacts would take place prior to projected surface disturbance in the future. Given these conditions, impacts on cultural resources are not significant issues for analysis in the Final EIS.

11. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the Horseshoe Canyon (South) WSA is light (estimated at 100 visitor days per year) and would remain mostly primitive with or without wilderness designation due to the terrain of the WSA and the presence of other attractions in the region. Therefore, impacts on recreation use would not be significant and they are not analyzed in detail in the Final EIS. Impacts on primitive recreational values are analyzed as part of the analyses of impacts on the wilderness value of primitive recreation.

12. Economic Conditions: The public, including State and local government, is concerned that wilderness designation would preclude mineral or other economic developments and adversely affect local economic conditions. Others believe that primitive recreation use would increase following wilderness designation and would contribute to the local economy.

There are no existing or anticipated major mineral developments or proposals for lands or realty activities which would be impaired with or without wilderness designation. Because no major economic developments are expected (only 10 employees at one time for oil and gas exploration) and because recreational use is only 100 visitor days per year, the potential impacts on economic conditions are not significant issues for the Horseshoe Canyon (South) WSA.

### • Issues Analyzed in Detail

The significant issues for the Horseshoe Canyon (South) WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude, primitive recreation, and special features.
2. Impacts on oil and gas exploration.
3. Impacts on livestock management including the ability of operators to use mechanized equipment for movement and management of livestock and to construct reservoirs for livestock use.

Comments made during the public comment period for the Draft EIS included:

1. Inadequacies of the BLM wilderness inventory and inconsistency in the reported acreage of the WSA.
2. Support for inclusion of State lands in the wilderness study.
3. Support for the All Wilderness Alternative to maintain continuity between BLM and NPS wilderness proposals.
4. Recognition of the unique topography of the WSA and the lack of information in the geology section.
5. Statements on conflict between wilderness management and uranium, oil and gas, and livestock interests in the WSA.
6. Questions on interim management activities and their effect on the BLM Proposed Action.
7. The need for additional maps.
8. Statements on the need to correlate decisions on wilderness and conversion of oil and gas leases to combined hydrocarbon leases.
9. Questions on BLM's assessment of the tar sand potential and the feasibility of tar sand development.
10. Opposition to development of the Tar Sand Triangle. Questions on the oil and gas potential and the present leasing situation in the WSA.
11. Questions on the affect of the BLM Proposed Action on adjacent NPS lands.
12. Recognition of paleontological values in the WSA.
13. Inadequacy of BLM's assessment of wildlife in the WSA.



# HORSESHOE CANYON (SOUTH) WSA

14. The need for additional resource inventories.
15. Questions on BLM's ratings of wilderness values.
16. New information on cultural resources.
17. BLM's underestimation of the benefits of wilderness designation on wildlife, other resources, and multiple uses.
18. Questions on BLM's recreational use estimates.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 39, for responses to specific comments about the Horseshoe Canyon (South) WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

An alternative of 52,020 acres that would add approximately 6,400 acres of State land and 6,820 acres of public land along the north, west, and east boundaries of the WSA was suggested in the public comments. This alternative is not analyzed because the inclusion of State lands would not be consistent with BLM wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1). An alternative of 39,000 acres was also suggested. This alternative is not analyzed in detail because it would not result in impacts appreciably different from the 38,800-acre All Wilderness Alternative and, therefore, offers no major distinctions beyond the alternatives analyzed in the Final EIS.

### Alternatives Analyzed

Four alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (38,800 acres); (3) Large Partial Wilderness (Proposed Action) (36,000 acres); and (4) Small Partial Wilderness (28,700 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume IV are also applicable.

### • No Action/No Wilderness Alternative

With this alternative, none of the 38,800-acre Horseshoe Canyon (South) WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c). The 1,922.2 acres of State land within the WSA have not been identified in the MFP for Federal acquisition through exchange or purchase (refer to Map 1).

### • Management Conditions and Constraints

All 38,800 acres would be managed as oil and gas leasing Category 1 (standard stipulations). Public water reserve withdrawals on 120 acres, segregating lands from public land laws, and nonmetallic mineral mining would remain in effect. One post-FLPMA lease (320 acres) and future leases could be developed under stipulations issued at the time of leasing; however, the wilderness protection stipulation would not apply to the existing lease. With the exception of the 120 acres withdrawn from metallic mineral mining, the area would remain open to mineral location, leasing, and sale. There are no mining claims at present.

About 58 acres of the WSA are part of the Tar Sand Triangle STSA; however, recoverable tar sand deposits are not projected in the WSA.

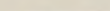
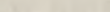
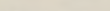



Because of moderate certainty (c3) that there are small deposits of oil and gas in the WSA, it is projected that oil and gas exploration would occur in this area in the foreseeable future. No other mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I for an explanation of the mineral and energy resource development projections).

The present domestic livestock grazing use in the area would continue as authorized in the MFP (estimated 1,210 AUMs). Use and maintenance of three corrals, 2 miles of fence, one reservoir, and six improved springs would continue. Three reservoirs proposed for development in this WSA could be constructed without consideration of wilderness protection.

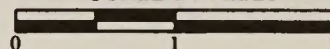


# HORSESHOE CANYON (SOUTH) WSA

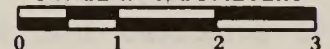
**Map 1**  
**LAND STATUS**  
**Horseshoe Canyon (South) WSA**  
**UT-050-237**

-  WSA Boundary
-  Canyonlands National Park Boundary
-  Glen Canyon National Recreation Area Boundary
-  State Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent WSA

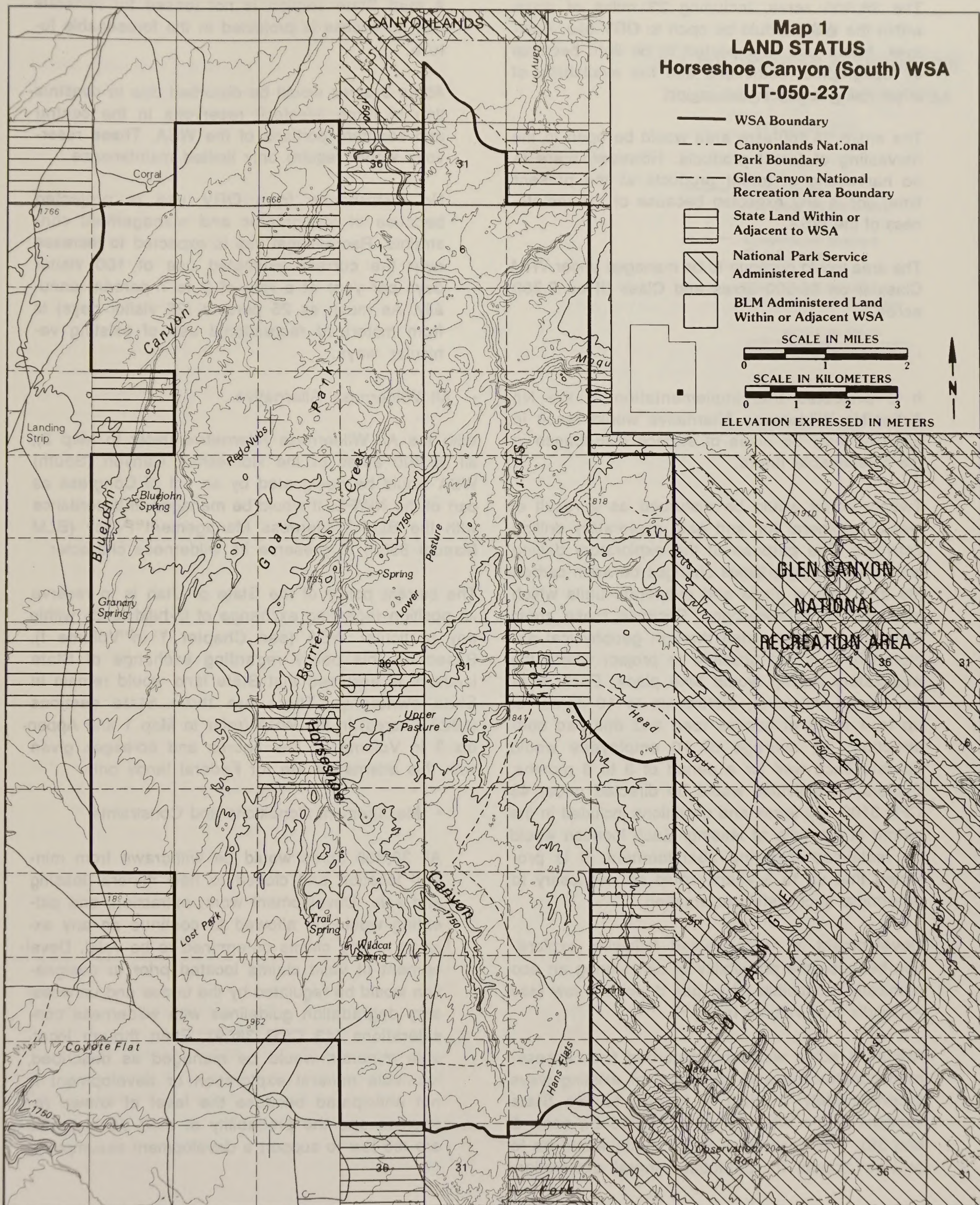
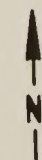
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS





## HORSESHOE CANYON (SOUTH) WSA

The 38,800 acres, including 23 miles of ways within the WSA, would be open to ORV use. However, future use is expected to be light because of topographic restrictions and the availability of other riding areas in the region.

The entire 38,800-acre area would be open to the harvesting of forest products. However, there is no harvesting of forest products at the present time, nor is any expected because of the remoteness of the WSA.

The area would continue to be managed under VRM Class II on 36,500 acres and Class III on 2,300 acres.

- Action Scenario

It is projected that implementation of the No Action/No Wilderness Alternative would result in approximately 38 acres of surface disturbance in the foreseeable future.

Twenty acres would be disturbed as a result of leasable mineral (oil and gas) exploratory drilling activities. The purpose of the exploratory drilling would be to locate facies changes between carbonate and basinal shale and evaporate units which may contain hydrocarbons. Because these areas can only be determined through geophysical exploration, it is not possible to project where the exploratory drilling would take place. Each location would, however, disturb up to 10 acres for up to 4 miles of access road and drill pad construction. An average of 10 employees would operate each well for a period of 3 to 6 months. Exploration activities would be directed under 43 CFR 3100 and terms and conditions included in the permit at the time of leasing. Each location would be reclaimed following abandonment. It is projected that up to 5 years would be necessary to determine successful reclamation.

Development is not projected following exploration because the probability of discovering an economically producible oil or gas deposit is low (see Appendix 6 in Volume I).

About 15 acres would be disturbed from access-road construction and upgrading of existing ways (approximately 7 miles in length) to two State sections in the WSA (T. 28 S., R. 15 E., secs. 2 and 36). The purpose of these roads would be to provide access for potential mineral exploration.

A third State section is not leased for minerals and no access is projected in the foreseeable future.

About 3 acres would be disturbed due to construction of three livestock reservoirs in the central and southern portions of the WSA. These reservoirs would require only limited maintenance.

No disturbance from ORV use is projected because of topographic and management constraints. Recreational use is expected to increase over the current estimated use of 100 visitor days per year at a rate of 2 to 7 percent annually. As much as 25 percent (25 visitor days) is from motorized recreational use of existing vehicular ways.

- All Wilderness Alternative

With the All Wilderness Alternative (refer to Map 2), all 38,800 acres of the Horseshoe Canyon (South) WSA would be designated by an act of Congress as part of the NWPS. It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The current policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that State land would remain in State ownership. There are three State sections (1922.2 acres) in the WSA (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

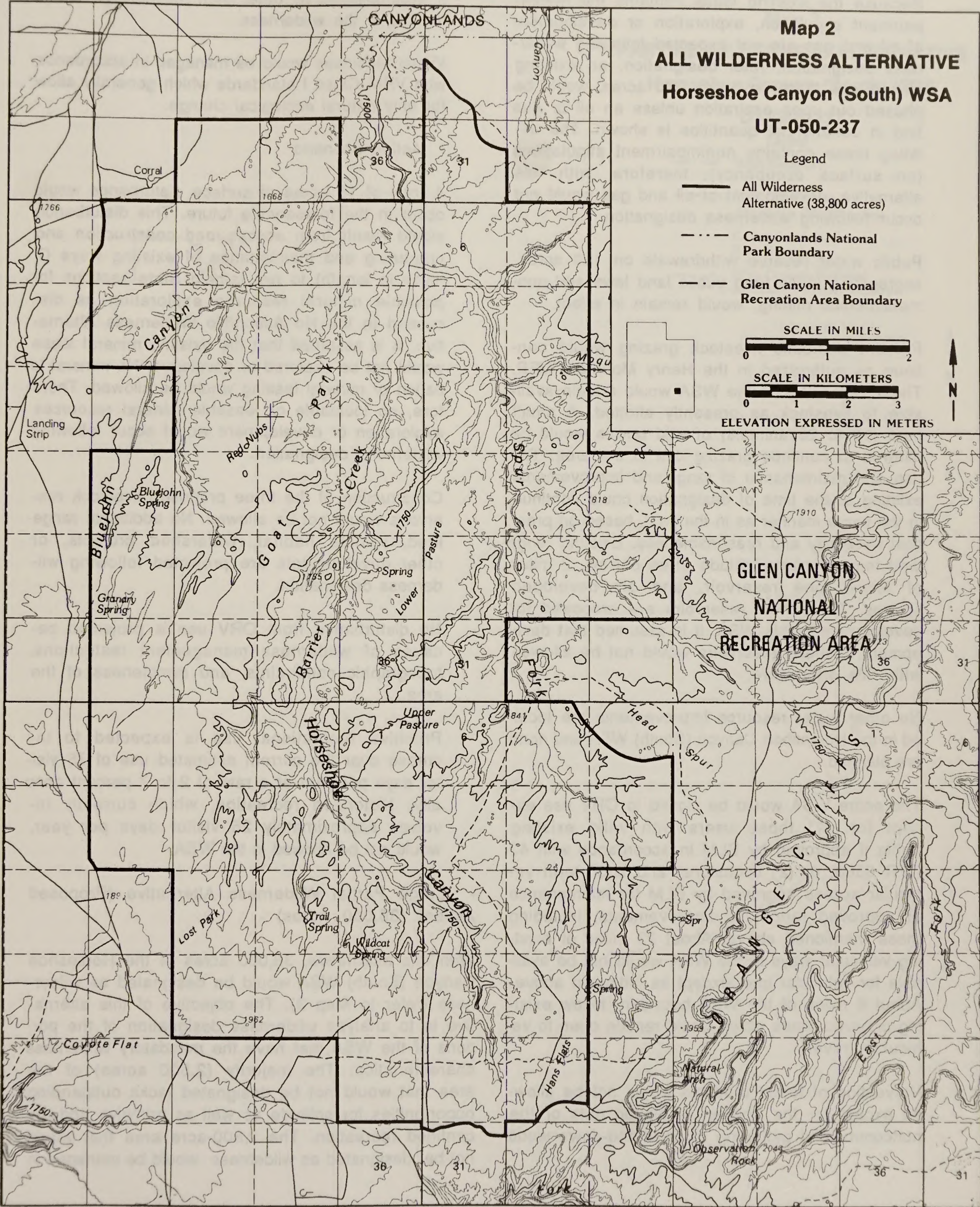
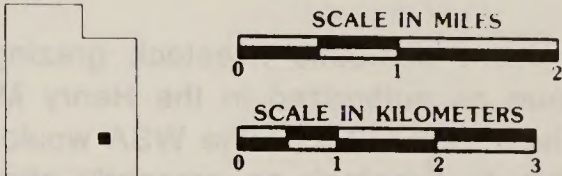
All 38,800 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on any existing mining claims determined to be valid. Development of valid claims located prior to designation would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations (43 CFR 3809). Even though locatable minerals would be managed as described, locatable mineral exploration or development is not anticipated because the level of known resources and the probability of their development are too low to support a development assumption.



HORSESHOE CANYON (SOUTH) WSA

Map 2  
ALL WILDERNESS ALTERNATIVE  
Horseshoe Canyon (South) WSA  
UT-050-237

- Legend
- All Wilderness Alternative (38,800 acres)
  - - - Canyonlands National Park Boundary
  - . - Glen Canyon National Recreation Area Boundary





## HORSESHOE CANYON (SOUTH) WSA

Because the existing lease contains the nonimpairment stipulation, exploration or development of oil and gas are not expected following wilderness designation. After designation, an existing oil and gas lease, involving 320 acres, would be phased out upon expiration unless an oil or gas find in commercial quantities is shown. The existing lease contains nonimpairment stipulations (no surface occupancy); therefore, with this alternative, development of oil and gas would not occur following wilderness designation.

Public water reserve withdrawals on 120 acres, segregating lands from public land laws and non-metalliferous mining, would remain in effect.

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 1,210 AUMs in the WSA would remain available to livestock as presently allotted. A small herd (10 to 20 animals) of wild burros would be allowed to continue grazing use in the area. The use and maintenance of rangeland improvements existing at the time of designation could continue in the same manner as in the past, based on practical necessity and reasonableness. Existing rangeland improvements include three corrals, 2 miles of fence, one reservoir, and six developed springs. Three new reservoirs are proposed for development in this WSA. It is assumed that development of these reservoirs would not be allowed with this alternative.

No other water resource improvements are located in the Horseshoe Canyon (South) WSA and none are planned.

The entire WSA would be closed to ORV use except for: (1) those users with valid existing rights if approved by BLM in accordance with 43 CFR 8560; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland improvements, including those mentioned above. About 23 miles of existing vehicular ways in the WSA would not be available for vehicular use, except as indicated above. About 6 miles of the WSA boundary follow existing unpaved roads which would remain open to vehicular travel.

Harvesting of forest products would not be allowed except for the harvest of pinyon nuts or the noncommercial gathering of dead-and-down wood

if accomplished by other than mechanical means for use in the wilderness.

Visual resources would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.

- Action Scenario

A total of 15 acres of surface disturbance would occur in the foreseeable future. This disturbance would result from access-road construction and upgrading and maintenance of existing ways (7 miles in length) to two in-held State sections for possible mineral resource exploration as discussed in the No Action/No Wilderness Alternative. It is assumed that the existing mineral lease would not be explored or developed. No mineral location or mineral leasing would be allowed. Therefore, no locatable or leasable mineral resources exploration or development would occur following wilderness designation.

Construction of the three proposed livestock reservoirs would not be allowed. No additional rangeland, wildlife habitat, watershed projects, or other developments are projected following wilderness designation.

No disturbance from ORV use is projected because of wilderness management restrictions, topographic constraints, and remoteness of the area.

Primitive recreational use is expected to increase over the current estimated use of 75 visitor days per year at a rate of 2 to 7 percent annually. Motorized recreation, which currently involves approximately 25 visitor days per year, would not be allowed in the WSA.

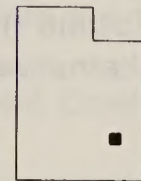
- Large Partial Wilderness Alternative (Proposed Action) (36,000 Acres)

With this alternative, 36,000 acres of the Horseshoe Canyon (South) WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze wilderness designation of the portions of the WSA that have the mandatory wilderness characteristics. The majority (2,500 acres) of the area that would not be designated lacks outstanding opportunities for solitude as well as primitive and unconfined recreation. The 2,800-acre area that would not be designated as wilderness would be managed in



**Map 3**  
**PARTIAL WILDERNESS ALTERNATIVE**  
**Horseshoe Canyon (South) WSA**  
**UT-050-237**

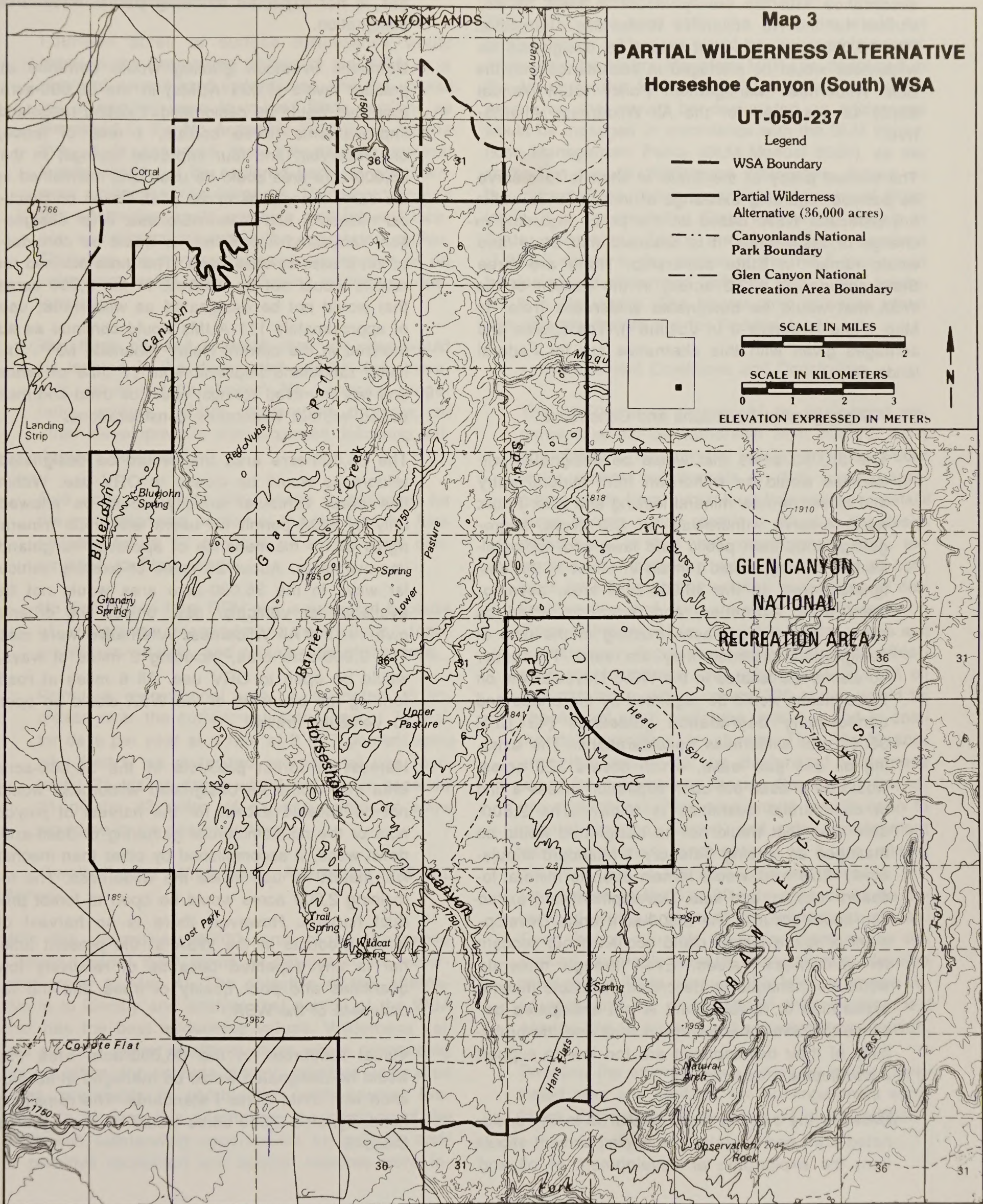
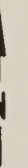
- Legend
- WSA Boundary
  - Partial Wilderness Alternative (36,000 acres)
  - - - Canyonlands National Park Boundary
  - - - Glen Canyon National Recreation Area Boundary



SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS





## HORSESHOE CANYON (SOUTH) WSA

accordance with the Henry Mountain MFP as described for the No Action/No Wilderness Alternative. The 36,000-acre area that would be designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described for the All Wilderness Alternative.

The current policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA. Based on this policy regarding exchange of State lands, it is assumed that State land would remain in State ownership. There are three State sections (1,922.2 acres) in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

The 36,000 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Public water reserve withdrawals on 120 acres, segregating lands from public land laws and nonmetal-liferous mining, would remain in effect in the designated area. In the 36,000-acre area, development work, extraction, and patenting would be allowed on mining claims existing at the time of designation, provided they are valid. Presently, no claims are located in the WSA. Development on these claims would be regulated by the undue and unnecessary degradation guidelines (43 CFR 3809) with wilderness considerations. The existing oil and gas lease, which covers 320 acres, would be phased out upon expiration unless a find in commercial quantities is shown. The 2,800-acre area that would not be designated would be managed as leasing Category 1 (standard stipulations). This area would remain open to mineral location, leasing, and sale. Development and extraction could occur in the 2,800-acre area. Development of future leases could occur without concern for wilderness values. Even though minerals would be managed as described, locatable mineral exploration or development is not anticipated because the level of known resources and the probability of their development are too low to support a development assumption.

Because the existing lease would be in the designated area and contains the nonimpairment stipulation, the exploration or development of oil and

gas is not expected following partial wilderness designation.

Domestic livestock grazing would continue at present levels (1,099 AUMs) in the 36,000-acre area that would be designated. Existing rangeland improvements (three corrals, 1 mile of fence, one reservoir, and four improved springs) in the 36,000-acre area could be used and maintained in the same manner as in the past, based on practical necessity and reasonableness. After designation, rangeland improvements would be considered on a case-by-case basis. The three planned reservoirs would not be allowed. In the 2,800 acres that would not be designated as wilderness, use of approximately 111 AUMs would continue as authorized in the current Henry Mountain MFP. Existing rangeland improvements (1 mile of fence and two improved springs) could be used and maintained without wilderness considerations.

The 36,000-acre area that would be designated wilderness would be closed to ORV use. Within this area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. About 21 miles of existing vehicular ways in the 36,000-acre area would not be available for vehicular use, unless the criteria given in the All Wilderness Alternative were met. The 2,800-acre area, including 2 miles of ways, would be open to ORV use. All 6 miles of road forming the boundary of the WSA would be open to vehicular travel.

Harvest of forest products in the 36,000-acre area that would be designated wilderness would not be allowed except for the harvest of pinyon nuts or the noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use inside the wilderness. The remaining 2,800 acres would be open to forest product harvest. However, there is no harvest of forest products in the WSA at the present time, nor is any expected because of relatively low quantities and poor quality of trees and the remoteness of the WSA.

Visual resources in the 36,000-acre area that would be designated would be managed in accordance with VRM Class I standards. The remaining nondesignated 2,800 acres would be managed as Class II.



# HORSESHOE CANYON (SOUTH) WSA

- Action Scenario

Fourteen acres of surface disturbance would occur in the designated portion of the WSA as a result of access-road construction and the upgrading of existing ways to in-held State sections as discussed in the No Action/No Wilderness Alternative. It is assumed that the existing mineral leases would not be explored because of wilderness protection requirements. Implementation of this alternative would preclude new mineral location and mineral leasing in the designated portion. Therefore, no mineral resource exploration or development would occur following wilderness designation.

The three planned livestock reservoir sites would be located in the designated portion and, therefore, would not be allowed. No additional rangeland, wildlife habitat, watershed projects, or other developments are projected following wilderness designation.

One acre of surface disturbance is projected for the nondesignated portion of the WSA in the foreseeable future as a result of access-road construction to State lands.

No disturbance from ORV use is projected because of wilderness management restrictions, topographic constraints, and remoteness of the area.

Primitive recreational use is expected to increase over the current estimated use of 75 visitor days per year at a rate of 2 to 7 percent annually. Nearly all motorized recreational use (currently 25 visitor days) would not occur because 21 of the 23 miles of existing vehicular ways would be in the designated area.

- Small Partial Wilderness Alternative (28,700 Acres)

With this alternative, 28,700 acres of the Horseshoe Canyon (South) WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to identify and analyze that portion of the WSA that has the best wilderness values. Wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude and/or primitive recreation and special features were in-

cluded where possible within a manageable boundary. The 10,100-acre area within the WSA that would not be designated wilderness would be managed in accordance with the Henry Mountain MFP, as described in the No Action/No Wilderness Alternative. The 28,700-acre area that would be designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560), as described in the All Wilderness Alternative. Based on the current State policy regarding exchange of State lands, it is assumed that State land would remain in State ownership. There are three State sections (1,922.2 acres) in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

The 28,700 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Public water reserve withdrawals on 120 acres, segregating lands from public land laws and nonmetalliferous mining, would remain in effect in the designated area. In this area, development work, extraction, and patenting would be allowed to continue on mining claims existing at the time of designation provided they are valid. Development on these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations. One existing post-FLPMA oil and gas lease, which covers 320 acres, would be phased out upon expiration unless a find in commercial quantities is shown. The 10,100-acre area that would not be designated wilderness would be managed as leasing Category 1 (standard stipulations). This area would remain open to mineral location, leasing, and sale. Development work, extraction, and patent of future mining claims in the 10,100-acre area are possible. Future leases in the 10,100-acre area could be developed without concern for wilderness values. Even though minerals would be managed as described, locatable mineral exploration or development is not likely because the level of known resources and the probability of their development are too low to support a development assumption.

Because the existing lease would be in the designated area and contains the nonimpairment stipulation, exploration or development of oil and gas

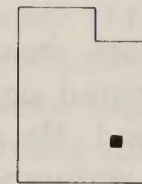


# HORSESHOE CANYON (SOUTH) WSA

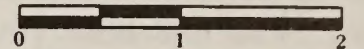
## Map 4 PARTIAL WILDERNESS ALTERNATIVE Horseshoe Canyon (South) WSA UT-050-237

Legend

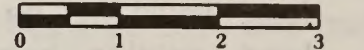
- WSA Boundary
- Partial Wilderness Alternative (28,700 acres)
- - - Canyonlands National Park Boundary
- . - Glen Canyon National Recreation Area Boundary



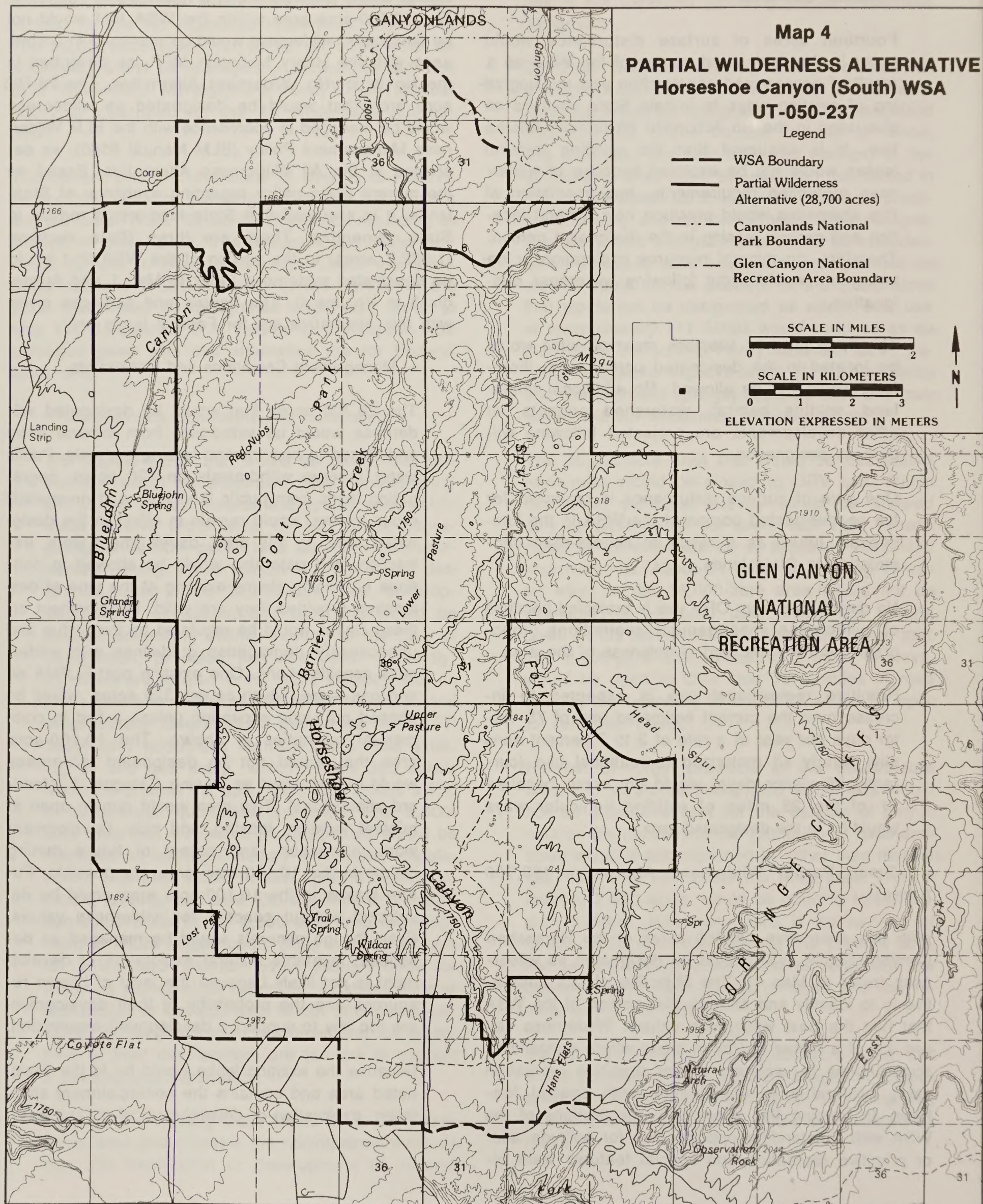
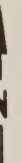
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



R. 15 E.

R. 16 E.



## HORSESHOE CANYON (SOUTH) WSA

are not expected following partial wilderness designation.

Domestic livestock grazing in the WSA would continue as presently authorized in the MFP (811 AUMs) in the 28,700 acres that would be designated wilderness. Existing rangeland improvements (one corral, one reservoir, and one improved spring) in the 28,700-acre area could continue to be maintained in the same manner as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources as long as wilderness protection criteria are met (refer to Appendix 1 in Volume I). Three reservoirs proposed in the 28,700-acre area would not be allowed. In the 10,100-acre area that would not be designated, use of approximately 399 AUMs would continue as authorized in the current Henry Mountain MFP and existing rangeland improvements (one corral, five improved springs, and one reservoir) could be used and maintained.

The canyons that would comprise the 28,700 acres designated wilderness would be closed to ORV use. Within this area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. This alternative includes approximately 12 of the 23 miles of vehicular ways in the WSA. These 12 miles would not be available for vehicular use after designation, unless the criteria given in the All Wilderness Alternative were met. The 10,100-acre area, including 11 miles of ways, would be open to ORV use. All 6 miles of roads forming the boundary of the WSA would be open to vehicular travel.

The harvest of forest products in the 28,700 acres that would be designated wilderness would not be allowed except for the harvest of pinyon nuts or the noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness area. The remaining 10,100 acres would be open to forest product harvest. However, there is no harvest in the WSA at the present time, nor is any expected because of the relatively poor quality and low quantity of trees and the remoteness of the WSA.

Visual resources on the 28,700 acres that would be designated wilderness would be managed in accordance with VRM Class I standards. The remaining 10,100 acres would be managed as Class II on 7,800 acres and Class III on 2,300 acres.

### • Action Scenario

Ten acres of surface disturbance would occur in the designated portion of the WSA as a result of up to 5 miles of access-road construction and the upgrading of existing ways to in-held State sections as discussed in the No Action/No Wilderness Alternative. No additional disturbance is projected. Implementation of this alternative would preclude new mineral location and mineral leasing in the designated area. Therefore, no mineral resource exploration or development would occur following wilderness designation. Three potential reservoir sites would not be developed. No additional rangeland, wildlife habitat, watershed projects, or other development are planned for the designated portion.

It is projected that 5 acres of surface disturbance would occur in the nondesignated portion of the WSA due to 2 miles of access-road construction to State lands for potential mineral exploration. No locatable or leasable mineral resource exploration or development is projected in the foreseeable future in the nondesignated portion.

No disturbance from ORV use is projected because of wilderness management restrictions, topographic constraints, and remoteness of the area.

Primitive recreational use is expected to increase over the current estimated use of 75 visitor days per year at a rate of 2 to 7 percent annually. Approximately 50 percent of the motorized recreational use (currently 25 visitor days) would not occur because 12 of the 23 miles of existing ways would be unavailable for vehicular use due to wilderness designation.

### Summary of Environmental Consequences

Table 1 presents environmental consequences of the alternatives analyzed in detail.



# HORSESHOE CANYON (SOUTH) WSA

Table 1  
Summary of Environmental Consequences

Alternatives				
Resource	No Action/No Wilderness	All Wilderness (38,800 Acres)	Large Partial Wilderness (36,000 Acres) (Proposed Action)	Small Partial Wilderness (28,700 Acres)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 38 acres because of mineral exploration and development, construction of access roads to State in-held lands, and rangeland projects, and would be indirectly reduced in quality on up to an additional 5,820 acres of the WSA. Special features would not be significantly affected except for Class A scenery which would be reduced in quality in the disturbed areas. Use of ways and new mineral exploration roads would detract from opportunities for solitude and primitive recreation in the WSA. This alternative would not complement or enhance the NPS proposal for wilderness designation of contiguous NPS lands.</p>	<p>Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 15 acres because of construction of access roads to State in-held lands and would be indirectly reduced in quality on up to 2,328 acres of the WSA during the period of activity. Special features would be preserved overall. Some Class A scenery would be reduced in quality in disturbed areas. Designation would complement and enhance the NPS proposal for wilderness designation of the contiguous portion of NPS lands.</p>	<p>Wilderness values would be preserved overall in the designated area which is approximately 93 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 15 acres because of construction of access roads to State in-held lands and would be indirectly reduced in quality on up to 2,328 acres of the WSA. Special features would be preserved with the exception that Class A scenery would be reduced in quality in disturbed areas. Use of 2 miles of ways in the nondesignated portion would detract from opportunities for solitude and primitive recreation in the WSA. This alternative would not complement or enhance the NPS proposal for wilderness designation for contiguous NPS lands.</p>	<p>Wilderness values would be preserved in the designated area which is approximately 74 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 15 acres because of construction of access roads to State in-held lands and would be indirectly reduced in quality on up to 2,328 acres. Most of the impact would be in the designated area. Special features would be preserved with the exception that Class A scenery would be reduced in quality in the disturbed areas. Use of 11 miles of ways in the non-designated portion would detract from opportunities for solitude and primitive recreation. This alternative would not complement or enhance the NPS proposal for wilderness designation for contiguous NPS lands.</p>



# HORSESHOE CANYON (SOUTH) WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives			
Resource	No Action/No Wilderness	All Wilderness (38,800 Acres)	Large Partial Wilderness (36,000 Acres) (Proposed Action)
			Small Partial Wilderness (28,700 Acres)
Impacts on Mineral and Energy Exploration and Production	This alternative would not adversely affect oil and gas or other mineral exploration or production because leasing, location of claims, and development activities would continue without wilderness restrictions.	Opportunities for oil and gas exploration would be foregone. There would not be a significant loss in recovery of oil and gas or other mineral and energy resources.	Opportunities for oil and gas exploration would be foregone. There likely would not be a significant loss in recovery of oil and gas or other mineral and energy resources.
	Livestock management would not be affected by this alternative because methods of access, maintenance, and development of rangeland projects would continue as at present.	Wilderness designation would result in restrictions on access to about 10 miles of ways that are used for livestock management, project maintenance, and access to three corrals. Three reservoirs proposed to improve livestock distribution could not be built and livestock distribution would not be improved. Wilderness designation would result in inconvenience and an increase in costs for management of the estimated 1,210 AUMs by three permittees.	This alternative would result in restrictions on access to about 3 miles of ways that are used for livestock management, project maintenance, and access to one corral. Three reservoirs proposed to improve livestock distribution could not be built and livestock distribution would not be improved. There would be very slight increases in cost for management of an estimated 811 AUMs by one permittee.



# HORSESHOE CANYON (SOUTH) WSA

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

The Horseshoe Canyon WSA is 12 miles long (north to south) and 7 miles wide and encompasses 38,800 acres. This WSA meets the size criteria for wilderness designation, whether or not the adjacent areas (a proposed wilderness area in the Horseshoe Canyon Detached Unit of Canyonlands National Park and the Horseshoe Canyon [North] WSA) are designated as wilderness.

- Naturalness

The WSA is in a natural condition. The only human intrusions consist of 2 miles of fence, three corrals, one livestock reservoir, two drill sites, six improved springs, and 23 miles of ways in various stages of natural rehabilitation. Overall, intrusions were judged substantially unnoticeable, and the WSA as a whole meets the standard for naturalness. Naturalness has not been altered since the BLM Intensive Wilderness Inventory (USDI, BLM, 1980).

- Solitude

This WSA consists of numerous steep-walled, winding canyons that offer topographic screening and that substantially contribute to opportunities for solitude. Scattered clusters of pinyon-juniper vegetation on the mesas above the canyons screen visitors from each other on the periphery of the WSA. Also, there are no sights and sounds outside the WSA that would adversely affect opportunities for solitude. The large size of the area also contributes to spatial screening.

The quality of solitude meets the standards for outstanding set by the Wilderness Act on approximately 36,300 acres in the WSA. The opportunities on the re-

maining 2,500 acres (in the northern portion of the WSA) were rated less than outstanding due to the lack of topographic and vegetation screening in this area.

- Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size and recreational opportunities present.

As discussed in the Recreation section, this WSA has 11 recreational opportunities present. Due to the presence of numerous potential campsites, rugged and colorful canyons, caves, slickrock areas, contrasting vegetation types, springs, and numerous archaeological sites, seven opportunities were rated outstanding. These include backpacking, camping, horseback riding, photography, and archaeological, geological, and scenic sightseeing.

Overall, the WSA offers outstanding opportunities for a variety of primitive and unconfined types of recreation that meet the standard set by the Wilderness Act on approximately 28,400 acres. Opportunities on the remaining 10,400 acres were rated less than outstanding due to the absence of recreational features. These acres are in the rolling pinyon-juniper vegetated portions along the southern and southwestern margins of the WSA.

- Special Features

Wilderness special features identified during the BLM Wilderness Inventory include high quality archaeological sites (unique rock art, long-term use cave sites, etc.), outstanding canyon scenery, caves, and wild burros. The area also has a historic association with Butch Cassidy and the Wild Bunch. Several cabins used by the outlaws are on the edge of the WSA. The diversity and uniqueness of these features enhance the other wilderness values of the WSA.

Cowboy Cave, an archaeological site near Spur Fork Canyon, contains some of the richest and oldest paleontological remains in the State of Utah. Underlying the cultural remains in the cave is a fairly heavy dung deposit left by mammoth, bison, horse, camel, and sloth. The mammoth is further represented by the tips of two juvenile tusks. The dung was radiocarbon dated to between 11,000 and 13,000 years ago (9,000 to 11,000 B.C.).



# HORSESHOE CANYON (SOUTH) WSA

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. The endangered peregrine falcon and black-footed ferret may occur in the WSA. In addition, there are six animal species that are considered sensitive (FWS candidate or BLM sensitive). The WSA may have desert bighorn sheep which is a wilderness-associated species. Refer to the Affected Environment, Wildlife section, for additional information. Approximately 94 percent (36,500 acres) of the WSA is rated Class A for scenic quality.

## Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has PNV types of pinyon-juniper woodland and galleta threeawn shrub steppes. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV type represented by this WSA is compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake-Ogden and Provo-Orem, Utah.

## Air Quality

This WSA is located in a PSD Class II area as defined in the Clean Air Act, as amended. It is affected little by air pollution and visibility is generally excellent. The WSA is adjacent to the Horseshoe Canyon Detached Unit of Canyonlands National Park, the nearest Class I area. The WSA is near the center of an area with the highest visual range (70+ miles) in the United States (EPA, 1979).

## Geology and Topography

The Horseshoe Canyon (South) WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. The WSA lies along the southern limb of a large structural trough that separates the San Rafael Swell to the northwest from the Monument Upwarp to the southeast.

Rocks at the surface of the WSA range from early Triassic to middle Jurassic, and include the Navajo sandstone, the Carmel Formation, and the Entrada sandstone. The overall structure of the WSA is a smooth, northwest-dipping homocline.

This WSA varies in elevation from 5,800 to 6,200 feet and contains the headwaters of three ephemeral creeks (Barrier, Bluejohn, and Spur). The canyons reach depths of up to 600 feet and are characterized by a wide range of colors, sheet rock faces, and many large overhangs forming small caves. Erosive landforms present include buttes, mesas, spurs, elevated plateaus, cliff scarps, rounded slickrock domes, entrenched canyons, and arroyos. Overall, the quality of landform expression in the WSA is an above-average example of the landforms found in the Colorado Plateau.

## Soils

Approximately 35 percent (13,580 acres) of the WSA is rock outcrop and sand. The remaining soils are sandy loams. Because of low precipitation in the WSA, most erosion is occurring from wind. The erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the Glossary).

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	27,900	72	36,270
Slight	0.6	10,900	28	6,540
Stable	0.3	0	0	0
Total		38,800	100	42,810

Sources: USDI, BLM, 1978c and 1979c; Leifester, 1978.

Sediment yields vary from slight to moderate.

The soil salinity class of the WSA is estimated as very slight with an average salinity production of 10 lb of salt per acre per year.

## Vegetation Including Special Status Species

The majority of the WSA is characterized by pinyon-juniper woodland, desert grass, and blackbrush communities. The remainder of the area consists of rock outcrops and deep canyons. The pinyon-juniper woodland generally lies on the west and south sides of the WSA and is found on gently rolling hills in association with shrubs and desert grasses. Desert grass communities are predominantly found in grassy parks between canyon tributaries and are occupied by mid-grasses in association with Mormon tea (*Ephedra*) and



# HORSESHOE CANYON (SOUTH) WSA

mixed desert shrubs. Blackbrush communities are located generally in the northern portion of the WSA. Table 3 summarizes the major vegetation types. Small areas of riparian vegetation are found along the intermittent stream beds. The acreage of riparian vegetation is small and, therefore, has not been identified in Table 3.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Barren (rock outcrop, badlands)	13,580	35
Pinyon-juniper woodland	7,760	20
Ephedra	6,208	16
Desert shrub	<u>11,252</u>	<u>29</u>
Total	38,800	100

Source: USDI, BLM, 19823b.

No special status plant species are thought to occur in the WSA (see Appendix 4 in Volume I).

The Horseshoe Canyon (South) WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed in Table 4.

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	10,860	28
Galleta-threawn shrubsteppe	<u>27,940</u>	<u>72</u>
Total	38,800	100

Source: USDI, USGS, 1978.

## Water Resources

The Horseshoe Canyon (South) WSA lies within the Lower Green River subbasin of the Upper Colorado River hydrologic subregion. There are no perennial streams in the WSA. Numerous small canyons serve as the headwaters of three ephemeral streams which are tributaries of the Green River. Nine springs, six of which are improved, have been identified in the WSA. All springs have either private or BLM water user claims and are used by livestock, wildlife, and wild burros.

This WSA is within the San Rafael Water Right Adjudication Area 93. The waters are not fully appropriated

within this drainage. Applications of 0.015 cfs are being accepted and considered on their individual merit (UDNRE, DWR, 1988). Temporary and fixed time applications may exceed 0.015 cfs in certain areas. There are no areas of significant groundwater development in this WSA.

The surface waters of this WSA drain directly into the Green River and, therefore, are managed according to the water quality requirements for this section of the Green River. The State's requirements are: Class 1C (protected for use as a raw water source for domestic systems); Class 2B (protected for boating, water skiing, and similar uses, excluding swimming); Class 3B (protected for warm water species of game fish and other warm water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).

Water quality problems in the lower section of the Green River are TDS and total phosphates. Suspended and dissolved solids are highest during runoff seasons. Salinity will be a continual problem and increases toward the lower end of the hydrologic basin. The contributions of salinity are from natural sources and irrigation. The soils and runoff of the Horseshoe Canyon (South) WSA are low in salinity.

Most of the water originates from runoff or the Navajo Sandstone Formation. Generally, TDS range from 250 to 1,000 parts per million (ppm). Recommended TDS levels for human consumption are up to 500 ppm. Levels recommended for livestock are up to 7,000 ppm. Almost all springs have an extremely high coliform bacteria count.

The water-bearing aquifer is the Navajo sandstone. Water is less than 1,000 feet from the surface and water yields range from 5 to 50 gallons per minute. TDS ranges from 250 to 1,000 ppm.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Horseshoe Canyon (South) WSA is given in Table 5. Refer to Appendix 5 in Volume I for a description of the mineral and energy resource rating system.

The WSA could contain deposits of copper that is currently listed as a strategic and critical material (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand.



# HORSESHOE CANYON (SOUTH) WSA

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f 2	c3	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Copper	f 2	c1	Less than 50,000 metric tons
Uranium	f 2	c1	Less than 500 metric tons
Coal	f 1	c4	None
Geothermal	f 1	c3	None
Hydroelectric	f 1	c4	None
Gold	f 1	c3	Little to none
Silver	f 1	c3	Little to none

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

## • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA, with the exception of some minor gas deposits in the northwest portion. Currently, there is no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin, which has oil and gas production established to the east; the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them; the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and the lack of any oil and gas production established from any of the oil and gas wells drilled in the area. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic feet of gas (f2).

The WSA is rated as having a moderate potential for hydrocarbon accumulations in stratigraphic and structural traps within Mississippian and Pennsylvanian rocks (Molenaar, et al., 1982). According to the USGS the area has a moderate po-

tential for oil and gas based on reported oil shows in 14 of the 36 wells drilled in the vicinity of the WSA that they studied (USDI, USGS, 1985a).

The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. The WSA lies in an area within the basin where Pennsylvanian and Permian sedimentary facies change to carbonate from basinal shales and evaporates. This facies change is favorable for the formation of stratigraphic hydrocarbon traps. In addition, due to the WSA's position within the Paradox Basin, where the basin changes from a penesaline facies to carbonate shelf facies, the possibility exists for bioherm and oolite shoal buildups within Mississippian and Pennsylvanian rocks. It is possible that as oil accumulated and moved through the rocks within the basin, it may have become pooled within these stratigraphic traps. Evidence suggests oil has moved through the sedimentary rocks in the area and resulted in the oil impregnated rock deposit within the Tar Sand Triangle.

Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to contain 3 to 5 million barrels of oil each, and average 40 to 80 acres in size in the eastern portion of the Paradox Basin.

Two oil and gas wells have been drilled within the vicinity of the WSA. One of these wells encountered shows of gas in Pennsylvanian and Mississippian strata.

Based on the these factors, the certainty of occurrence for oil and gas is rated moderate (c3), due to the WSA's location within the Paradox Basin and the moderate to strong show of gas reported from one of the wells within the WSA.

Under the current land use plan, all 38,800 acres in the WSA are in Category 1 (standard stipulations). There is presently one post-FLPMA oil and gas lease covering 320 acres.

### • Tar Sand

About 58 acres of the WSA are located on the Tar Sand Triangle STSA. The Horseshoe Canyon (South) WSA is not underlain by oil impregnated rock within the White Rim Sandstone Member of the Cutler Formation (as defined by the 0 foot



## HORSESHOE CANYON (SOUTH) WSA

isopach map of the tar sand net pay zone). Therefore, there are no oil reserves from the tar sand resource within the Horseshoe Canyon (South) WSA. Using the criteria presented by SAI (1982), the tar sand resource potential is rated as f1/c4.

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA, and there are presently no mining claims.

- Uranium

The principle uranium-bearing strata is the area of the WSA is the Triassic Chinle Formation, specifically the Shinarump, Mossback, and Monitor Butte Members. The Shinarump, however, is not present within the WSA and the Mossback facies present is a blanket-like deposit and not conducive to uranium mineralization. The Monitor Butte Member of the Chinle Formation is also present in the WSA, but is considered to have a low certainty for uranium mineralization. This is due to the lack of known authigenic dolomite, carbonaceous mudstone beds, or a facies representative of the uranium-bearing paleofluvial systems (USDI, USGS, 1985). Based on this information, the WSA as a whole has a potential for small discontinuous uranium deposits and is rated (f2) (potential for less than 500 metric tons of uranium oxide). No uranium mines or prospects are known within or around the WSA and information is lacking to evaluate whether or not uranium exists within the tract. The certainty that uranium occurs is therefore rated very low (c1).

- Gold, Silver, and Copper

Stream sediment and panned concentrate stream sediment samples showed evidence of isolated mineral occurrences of gold, silver, lead, copper, and molybdenum (USDI, USGS, 1985). However, no mineralized areas containing these elements were found. The rocks exposed in the tract are all sedimentary in nature and, with the exception of copper, there is a low potential of occurrence for these resources. Copper is commonly found in association with uranium in the area and was reported in the sampling program conducted by the USGS and USBM. The potential for these resources, excluding copper, to exist within the WSA is very low with a moderate degree of certainty (f1/c3). Copper may exist in small quantities in association with uranium within the WSA

(f2), but the certainty that it does exist is very low (c1).

- Salable Minerals

The only possible salable minerals in the WSA are sand and gravel. Potential markets are very small and there are available sources of supply closer than those found in the WSA.

### Wildlife Including Special Status Species

Several species of wildlife may be found in the WSA. These include mule deer, antelope, fox, coyote, and badger, as well as a few species of birds. The area contains about 2 percent of the habitat for Deer Herd Unit 29. This herd unit covers the San Rafael Desert; however, deer are principally distributed along the river bottoms, especially the Price River, all of which are outside the WSA (UDNRE, DWR, 1977).

The WSA also provides less than 15 percent of the habitat for Antelope Herd Unit 9. This herd is widely scattered and distribution is limited by the availability of water (UDNRE, DWR, 1982). Pronghorn antelope need up to 1.2 gallons (4.5 liters) of water per animal per day during the peak of summer (Salwasser, 1980). Also, most pronghorn antelope are found within 4 miles of a water source.

UDWR introduced desert bighorn sheep onto the nearby Orange Cliffs in 1982. The WSA contains habitat for this species. The distribution of water is the greatest limiting factor for bighorn sheep (Monson and Sumner, 1980). Also, bighorn sheep do not use water developments utilized by livestock or stay in areas used by livestock (UDNRE, DFG, 1968).

As previously stated, there are nine springs in the WSA; these range from a 0.5 mile to 4 miles apart. However, only six of these springs are improved and the quantity of water yield is not known.

There are no existing wildlife rangeland developments and none are planned. However, three livestock reservoirs are planned and these could benefit deer and antelope.

Two endangered species may inhabit the area, the black-footed ferret and the peregrine falcon. Four Category 2 candidate species, Tanner's black camel cricket, Great Basin Silverspot butterfly, ferruginous hawk, and white-faced ibis may also frequent the area (see Appendix 4 in Volume I). These species



# HORSESHOE CANYON (SOUTH) WSA

have not actually been sighted in the WSA. The Bell's vireo and the golden eagle (BLM sensitive species) may occasionally be seen in the WSA.

## Forest Resources

About 20 percent of the WSA (7,760 acres) is pinyon-juniper woodland. The woodland is generally located on mesas in the western and southern portions of the WSA. However, the remoteness of the WSA precludes utilization. Therefore, forest resources are not significant in the WSA.

## Livestock and Wild Horses/Burros

Ninety-two percent (35,790 acres) of the WSA is in the Robbers Roost Allotment, with the remainder in the Horseshoe Canyon (North) and Horseshoe Canyon (South) Allotments. Five of the 10 base waters on the Robbers Roost Allotment are included in the WSA. All are improved springs or reservoirs. Other rangeland improvements include 2 miles of fence, one reservoir, three corrals, and six improved springs. About 10 of the 23 miles of way are used for livestock purposes. Three new reservoirs are proposed within the Robbers Roost Allotment. There are no vegetation manipulation or treatment projects planned within the WSA.

Livestock use occurs year-round throughout most of the Robbers Roost Allotment with the exception of canyon bottoms. There are no rangeland improvements and little livestock use the portion of the Horseshoe Canyon (North) or the Horseshoe Canyon (South) Allotments included in the WSA. Table 6 gives the livestock grazing use data for this WSA.

Predator control was not conducted during the 1986-1987 period in the grazing allotments that comprise the Horseshoe Canyon (South) WSA (USDA, APHIS, 1988).

There are no wild horses within the WSA. Part of Wild Burro Herd Unit 5 is included within this WSA. Based on reported sightings, Horseshoe Canyon is one of the primary use areas for these animals. The wild burro herd appears to be low at this time. The most recent herd has about 16 mature animals and three colts (USDI, BLM, 1983b). The burros winter in Horseshoe Canyon. Management activities and burro roundups are conducted by horseback.

## Visual Resources

The visual character of the WSA is exceptional. About 94 percent (36,500 acres) of the area rates in the highest scenic quality class. Portions along the south and southeast boundary have gently rolling hills with pinyon trees, shrubs, and grasses. The central portion of the WSA is characterized by deep canyons from several feet to a 0.5 mile in width, colorful rock formations, and grassy parks with slickrock outcrop between the canyons. Vegetation includes grassy meadows, scattered pinyon-juniper woodland, and occasional riparian areas along some of the intermittent streambeds. The WSA is not visible from any major travel route. However, a secondary travel route borders the WSA on the west, south, and east; it is a major access route to the Maze District of Canyonlands National Park.

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Robbers Roost	159,420	35,790	5,288	1,060	440 Cattle 20 Horses	Yearlong	1
Horseshoe Canyon (South)	33,540	1,330	1,440	90	262 Cattle 20 Horses	11/01-04/15	1
Horseshoe Canyon (North)	60,930	1,680	2,145	60	390 Cattle	11/01-04/15	1
Total	253,890	38,800	8,873	1,210			3

Sources: BLM File Data.



# HORSESHOE CANYON (SOUTH) WSA

The BLM VRM ratings for the WSA are shown in Table 7. The BLM VRM system is explained in Appendix 7 in Volume I.

Table 7  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	36,500	94
Scenic Quality Class B	2,300	6
Scenic Quality Class C	0	0
Total	38,800	100
Management Class I	0	0
Management Class II	36,500	94
Management Class III	2,300	6
Management Class IV	0	0
Total	38,800	100

Source: USDI, BLM, 1982c

## Cultural Resources

A total of 23 sites have been recorded in the WSA, most are located around the peripheries of the area (USDI, BLM, 1988a). Most of the sites are small surface lithic scatters and only one contains associated hearths. Rockshelters in the WSA, especially Cowboy Cave, show a pattern of long-term repeated occupancy within the WSA. Cowboy Cave contains archaeological deposits dating from 6,800 years ago to later prehistoric times and paleontological deposits dating from 11,800 years ago. Another cave, Jim Walter's Cave, contains similar deposits, but was heavily vandalized before it could be scientifically excavated. Both cave sites are currently on the National Register of Historic Places. The WSA also contains a unique rock art style known as the Barrier-Canyon style and is attributed to the Fremont archaeological culture. This distinctive style is restricted to the immediate geographic vicinity and is found in the Horseshoe Canyon (South) WSA, the Dirty Devil WSA, and the Horseshoe Canyon Detached Unit of Canyonlands National Park. One Barrier-Canyon style pictograph site has been recorded in the unit and is eligible for nomination to the National Register of Historic Places. There are probably many similar rock-art sites in the WSA. Only one historic site, a sheep camp dating from the 1930s to the 1950s, has been recorded in the WSA.

Four inventories have been conducted in the WSA. During a 1977 inventory for the previous BLM Under the Ledges Planning Unit using a 1-percent sample, two randomly selected 160-acre quadrants were intensively surveyed within the WSA boundaries. The

two quadrants (320 acres) comprise 0.8 percent of the unit and a total of 14 sites were located within them. Using figures from this inventory, an estimated site density of approximately 1,006 sites per 23,000 acres was computed for the WSA. Using figures from four additional quadrants surveyed immediately adjacent to the WSA, a more conservative estimate of 719 sites per 23,000 acres was computed. The survey sample is quite small and not specifically designed for the WSA; hence, statistics based on it may be unreliable. However, the potential for finding additional sites in the unit is considered to be exceptionally high. While the vast majority of them would probably be small surface lithic scatters, rock-art and cave sites are also likely to be located.

## Recreation

The WSA has no developed recreational facilities or trails. Access to this area is possible by a jeep road or foot trail via the Horseshoe Canyon Detached Unit of Canyonlands National Park.

Fifteen recreational opportunities were evaluated for their quality in this WSA. Eleven opportunities are present in varying degrees. Seven of these opportunities (backpacking, camping, horseback riding, photography; and archaeological, geological, and scenic sightseeing) are outstanding in quality. Dayhiking, hunting, nature study, and wildlife sightseeing are average or below average in quality.

Backpacking opportunities are excellent due to: (1) the large size of the WSA; (2) the presence of adjacent potential wilderness in the lower end of Horseshoe Canyon; (3) a variety of hiking routes (approximately 60 miles total) over terrain with various levels of difficulty; and (4) a variety of interesting special features to explore and discover. An extended hiking trip from Hans Flat down the canyon system to the Green River would cover over 35 miles plus side trips. Dayhiking opportunities are somewhat limited by restricted access.

Camping opportunities are excellent due to the presence of many suitable sites, particularly under large rock overhangs in the canyon walls and in the grassy parks between canyon drainages.

Opportunities for archaeological sightseeing are excellent due to the many sites in the area. The area is historically associated with Butch Cassidy and the Wild Bunch.



## HORSESHOE CANYON (SOUTH) WSA

The various rock formations, erosional features, caves, vegetation, and narrow canyons all contribute to above-average opportunities for photography and geological and scenic sightseeing. While the area possesses exceptional recreational potential, use is limited due to remoteness, lack of publicity, and nearby competing areas. Visitor use data is nonexistent, but use is estimated at approximately 100 visitor days a year of which 75 percent (75 visitor days) is primitive in nature. There is little or no ORV recreational use in the WSA. However, as much as 25 percent (25 visitor days) is attributed to motorized recreation. There are about 23 miles of vehicular ways in the WSA and the entire area would be open to ORV use in accordance with the Henry Mountain MFP. Use is expected to be on existing ways because of terrain features and the conditions described above.

### Land Use Plans

There are no private in-holdings, rights-of-way, or private subsurface rights within the WSA. However, there are three State sections (1,922.2 acres) within the WSA. The current policy of the State of Utah is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. One of the three State sections (642 acres) is leased for oil, gas, and hydrocarbons. No activities are presently occurring on this section (UBSLF, 1988).

The WSA is entirely within Wayne County. The Final Report, Wayne County Master Planning Project (Call Engineering, 1976) does not identify recommendations at specific locations. The plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states that "Open spaces should be used for many purposes rather than strictly as wilderness areas." The Wayne County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under the BLM Henry Mountain MFP as described in the No Action/No Wilderness Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans. Wilderness is not addressed in the Henry Mountain MFP. However, wilderness des-

ignation is part of the BLM multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative.

### Socioeconomics

#### • Demographics

Wayne County is one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Wayne County grew from 1,483 to 1,950, an overall increase of about 31 percent. Table 8 presents the baseline and projected population data for Wayne County. It is estimated that between 1980 and 1987, population increased to about 2,090. Population projections for the county indicate that the number of people living in Wayne County in the year 2010 will be about 2,550 for about a 31-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 8  
Baseline and Projected Population and Employment Growth  
Wayne County

	1980	1990	2000	2010
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.

The closest community to the WSA is Hanksville, a small community of approximately 350 people, located about 48 road miles to the west.

#### • Employment

Wayne County is among the counties with the lowest average personal income in the State of Utah (South, et al., 1983). Table 8 shows the baseline and projected total employment for Wayne County to the year 2010.

Wayne County is part of the Central MCD. Table 9 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Central MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will increase by 57 percent. Trade will



# HORSESHOE CANYON (SOUTH) WSA

increase to 17 percent and nonfarm proprietors to 14 percent of the total. Agriculture will decline to 13 percent and government to 17 percent of the total. Mining will decline 1 percentage point to 3 percent of the total MCD employment.

Table 9  
Central Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, Insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	<u>2,278</u>	<u>2,800</u>	<u>3,300</u>	<u>4,100</u>
Totals	18,400	21,800	25,000	29,000

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Juab, Millard, Piute, Sevier, and Wayne Counties.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes the local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate the sales and revenues.

Table 10  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$640
Mining Claim Assessment	0	0
Livestock Grazing	\$24,200	\$1,863
Recreational Use	<u>\$ 410</u>	<u>No commercial permits</u>
Total	\$24,610	\$2,503

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

There are presently no mining claims in the WSA.

Two oil and gas exploration wells have been drilled in the WSA over the past 29 years. This drilling has generated an estimated 3-work years of employment over the past 29 years, some of which represent local employment.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

In the past, geophysical exploration work conducted in the WSA generated some temporary local employment and income.

Three livestock operators have a total grazing privilege of 1,210 AUMs within the WSA. If all this forage were utilized, it would account for \$24,200 of livestock sales and \$6,050 of ranchers' returns to labor and investment annually.

The WSA's recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the Horseshoe Canyon (South) WSA is estimated at about 100 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 10).

Oil and gas leases in the WSA cover approximately 320 acres. At \$2 per acre, lease rental fees could generate \$640 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 1,210 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$1,863 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The



## HORSESHOE CANYON (SOUTH) WSA

analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume IV and the Description of the Alternatives section for the Horseshoe Canyon (South) WSA.

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 7,800 acres).

In the foreseeable future, disturbance of approximately 38 acres from oil and gas exploration, and from development of rangeland projects and access to State in-holdings would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. The scenery would be reduced in quality in and around disturbed areas. Other special features including archaeological and paleontological values, caves, wild burros, special status species, and wildlife associated with wilderness would not be significantly affected because the disturbance would be minor, involving 0.10 percent (38 acres) of the WSA and the disturbance would generally not be located near special features. In addition, appropriate measures would be taken to protect special status species, and archaeological and paleontological values prior to any surface-disturbing activity.

During the period of activity, the visual and audible disturbance would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 15 percent (5,820 acres) of the WSA could be so affected in the foreseeable future.

Because future vehicular use would generally be limited by terrain to existing vehicular ways and any new exploration roads, little or no additional disturbance from ORV activity is anticipated in the future. The continued and increased use of existing ways would detract from opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would not be expected to reduce wilderness values because the additional use would be largely primitive in nature.

The extent that disturbance would occur on Federal lands and State in-holdings over the long term and, therefore, the specific long-term loss of wilderness values that would occur is not accurately known. However, loss would occur as intrusions increase.

This alternative would not complement or enhance the National Park Service (NPS) proposal for wilderness designation and management of the contiguous detached unit of Canyonlands National Park.

Conclusion: Wilderness values would not be protected by wilderness designation, and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 38 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 5,820 acres. Special features would not be significantly affected except for Class A scenery which would be reduced in quality in the disturbed areas.

#### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of oil and gas and other mineral and energy resources without consideration of wilderness values. Therefore, oil and gas exploration or production of other mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect oil and gas or other mineral exploration or production.

#### • Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 1,210 AUMs currently allocated in the WSA are controlled by three livestock permittees. Currently about 10 miles of way are being used in livestock management for spring maintenance and access to corrals. Few, if any, changes in livestock management techniques are expected. The three proposed reservoirs could be developed and result in improved livestock distribution. The 38 acres of surface disturbance by oil and gas



## HORSESHOE CANYON (SOUTH) WSA

exploration, and access-road and reservoir construction would not result in measurable losses of livestock forage.

Conclusion: Livestock management would not be affected by the No Action/No Wilderness Alternative.

### All Wilderness Alternative (38,800 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 38,800 acres as wilderness would preserve the wilderness values of size, naturalness, and outstanding opportunities for solitude. Opportunities for solitude would be preserved on approximately 36,300 acres that meet, and 2,500 acres that do not meet the standards for outstanding. Naturalness would be protected on all 38,800 acres because new development would not occur. Opportunities for primitive and unconfined recreation would be protected on 28,400 acres that meet and 10,400 acres that do not meet BLM standards for outstanding. Outstanding opportunities for several recreational activities (backpacking, camping, horseback riding, photography; and archaeological, geological, and scenic sightseeing) would be preserved. The special features in this WSA (i.e., caves, Class A scenery including canyon scenery, special status species, wildlife associated with wilderness, the wild burro herd, and archaeological and paleontological sites) would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of valid existing rights. In the foreseeable future, disturbance of up to 15 acres is anticipated for providing access to State lands (T. 25 S., R. 15 E., secs. 2 and 36) for purposes of oil and gas exploration on existing leases. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on and adjacent to the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA during the period of activity. As much as 6 percent (2,328 acres) of the WSA could be so affected. Special features, including archaeological and paleontological values, caves, wild burros, special status species, and wildlife associated with wilderness, would not be significantly affected because the disturbance would be minor (involving 0.04 percent of the WSA) and the disturbance would generally not be located where the special features are located. In addition, appropriate measures would be taken to protect special status species and cultural values

prior to any surface-disturbing activity. Some Class A scenery would be reduced in quality in the disturbed areas. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. All in all, after rehabilitation the disturbance would probably not be substantially noticeable in the area as a whole.

Vehicular use of existing ways would generally cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for long-term development of State in-holdings is not accurately known but would be less with this alternative than with No Action/No Wilderness Alternative.

The gradual increase in visitor use would be primitive in nature and would be managed so as to not result in the loss of wilderness values.

Designation of this WSA as wilderness would benefit the values and uses of the contiguous NPS wilderness proposal and the proposal for the Horseshoe Canyon (North) WSA. These three areas share a common watershed, canyon system, extended recreation travel trails (hiking and horseback riding), and archaeological values.

Conclusion: Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 15 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 2,328 acres of the WSA during the period of activity. Special features would be preserved except for loss of scenic quality in disturbed areas.

Designation would complement and enhance the NPS proposal for wilderness designation and management of the contiguous portion of Canyonlands National Park.

#### • Impacts on Mineral and Energy Exploration and Production

##### • Leasable Minerals

The existing post-FLPMA lease (320 acres) could be developed subject to the stipulations issued at



## HORSESHOE CANYON (SOUTH) WSA

the time of leasing. It is unlikely that this lease will be explored or developed or a showing of commercial quantities made prior to expiration. With the All Wilderness Alternative, the area would be closed to future leases and opportunity for exploration would be foregone. Because the probability of discovering an economic deposit is low, there likely would not be a significant loss of oil or gas production.

- Locatable and Salable Minerals

There are no mining claims in the WSA and because of low resource potentials and probability of development this alternative would not result in a significant loss of recoverable locatable or salable mineral resources.

**Conclusion:** Opportunities for oil and gas exploration would be foregone. There likely would not be a significant loss in recovery of oil and gas or other mineral or energy resources.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 1,210 AUMs currently allocated in the WSA are controlled by three livestock permittees. About 10 miles of way are being used for livestock management, spring maintenance, and access to corrals.

Some limitations on vehicular use may occur and permittees may not have ready access. This could be inconvenient for permittees and result in increased costs of management. It is assumed that the three proposed reservoirs would not be developed and livestock distribution would remain as at present.

**Conclusion:** Wilderness designation would result in restrictions on access to about 10 miles of way in the WSA that are used for livestock management, project maintenance, and access to the three corrals. Three livestock permittees would experience inconvenience and slightly increased management costs.

### **Large Partial Wilderness Alternative (Proposed Action) (36,000 Acres)**

- Impacts on Wilderness Values

Wilderness designation of 36,000 acres would contribute to preservation of the area's wilderness values. Protection in the designated area would include

management under VRM Class I which generally allows for only natural ecological change, ORV closure (including closure of 21 miles of ways), and closure to future mineral leasing and location. Naturalness and outstanding opportunities for solitude on all 36,000 acres and opportunities for primitive recreation (including 28,400 acres that meet and 7,600 acres that do not meet the standards of outstanding), and special features, including Class A scenery, archaeological and paleontological values, caves, wild burros, special status species, and wildlife associated with wilderness, would be protected.

In the foreseeable future, direct loss of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance from development of access to State sections for purposes of mineral exploration would occur on up to 14 acres within the designated portion and on 1 acre within the nondesignated portion. Special features would be largely preserved because disturbance would involve only 0.04 percent of the WSA and development is generally not expected in areas where special features are located. Class A scenery would be reduced in quality in the disturbed areas. Appropriate measures would be taken to protect endangered or sensitive species and cultural values prior to any surface-disturbing activity. Impacts to these values would not be significant.

Sights and sounds from foreseeable development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas, including up to 6 percent (2,328 acres) of the WSA. Most of this type of impact would be in the designated area.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation overall in the WSA although continued vehicular use of 2 miles of way in the nondesignated area would detract from these opportunities during the period of activity.

The gradual increase in visitor use that would occur over time would not be expected to reduce wilderness values because the additional use would be largely primitive in nature and managed to protect wilderness values.

The extent that disturbance would occur on Federal lands and State in-holdings over the long term and, therefore, the long-term loss of wilderness values that would occur is not accurately known but would



## HORSESHOE CANYON (SOUTH) WSA

be less with the No Action/No Wilderness Alternative due to the application of mitigation in the designated area that would limit development subject to valid existing rights.

The portion that would be designated would not be contiguous with the proposed wilderness in the Horseshoe Canyon Detached Unit of Canyonlands National Park. The area would be separated by a State section (1 mile), which contains the confluence of Bluejohn and Horseshoe Canyons.

Conclusion: Wilderness values would be preserved overall in the designated area which is approximately 93 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be lost on 15 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 2,328 acres. Special features would be preserved overall except for loss of scenic quality in the disturbed areas.

- Impacts on Mineral and Energy Exploration and Production

The existing oil and gas lease and the potential oil and gas and other mineral resources are in the area that would be designated as wilderness. Therefore, the impacts of partial wilderness designation on oil and gas exploration and other minerals would be approximately the same as described for the All Wilderness Alternative.

Conclusion: Opportunities for oil and gas exploration would be foregone but there likely would not be a significant loss in recovery of oil and gas or other mineral and energy resources.

- Impacts on Livestock Management

The effect of designation of 36,000 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the estimated 1,210 AUMs allocated, 1,099 would be within the designated portion of the WSA and 111 would be within the nondesignated portion. It is assumed that the three proposed livestock reservoirs would not be developed and livestock distribution would remain as at present. This alternative would result in restrictions on access to about 8 miles of ways in the WSA that are used for livestock management, project maintenance, and access to three corrals.

Conclusion: Three reservoirs proposed to improve livestock distribution could not be built and livestock distribution would remain as at present. Overall, this alternative would result in inconvenience and increased management costs for three permittees.

### Small Partial Wilderness Alternative (28,700 Acres)

- Impacts on Wilderness Values

Wilderness designation of 28,700 acres would contribute to the preservation of the area's wilderness values. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure including the closure of 12 miles of ways, and the closure to future mineral leasing and location. Naturalness and outstanding opportunities for solitude (all 28,700 acres meet the standard), opportunities for primitive recreation (including 28,400 acres that meet and 300 acres that do not meet the standard for outstanding), and special features, including Class A scenery, archaeological and paleontological values, caves, wild burros, special status species, and wildlife associated with wilderness, would be protected.

In the foreseeable future, direct loss of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance from development of access to State sections for purposes of mineral exploration would occur on up to 10 acres within the designated portion and 5 acres within the nondesignated portion. Special features would be largely preserved because disturbance would involve only 0.04 percent of the WSA and, except for Class A scenery which would be reduced in quality, development is not expected in areas where special features are located. In addition, appropriate measures would be taken to protect special status species and archaeological and paleontological values prior to any surface-disturbing activity. Impacts to these values would not be significant.

Sights and sounds from foreseeable development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas, including up to 6 percent (2,328 acres) of the WSA. Most of this type of impact would be in the nondesignated area.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation overall in the WSA, although vehicular use



## HORSESHOE CANYON (SOUTH) WSA

of 11 miles of ways in the nondesignated area would continue to detract from these opportunities during the period of activity.

The gradual increase in visitor use that would occur over time would not be expected to reduce wilderness values because the additional use would be largely primitive in nature.

The extent that disturbance would occur on Federal lands and State in-holdings over the long term and, therefore, the long-term loss of wilderness values that would occur is not accurately known but would be less than with the No Action/No Wilderness Alternative due to the application of mitigation in the designated area that would limit development subject to valid existing rights.

The portion that would be designated would not be contiguous with the proposed wilderness in the Horseshoe Canyon Detached Unit of Canyonlands National Park. The area would be separated by a State section which contains the confluence of Bluejohn and Horseshoe Canyons. This alternative, therefore, would not complement or enhance the NPS proposal for wilderness designation and management of contiguous NPS lands.

Conclusion: Wilderness values would be preserved overall in the designated area which is approximately 74 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 15 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 2,328 acres.

### • Impacts on Mineral and Energy Exploration and Production

The existing oil and gas lease and the potential oil and gas and other mineral resources are in the area that would be designated as wilderness. Therefore, the impacts of partial wilderness designation on oil and gas exploration and other minerals would be approximately the same as described for the All Wilderness Alternative.

Conclusion: Opportunities for oil and gas exploration would be foregone. There likely would not be a significant loss in recovery of oil and gas or other mineral and energy resources.

### • Impacts on Livestock Management

The effects of designation of 28,700 acres of the WSA as wilderness on domestic livestock grazing would be less than with the All Wilderness and Large Partial Wilderness Alternatives. Of the 1,210 AUMs allocated in the WSA, 811 would be in the designated area and 399 in the nondesignated area. Of the existing range improvements, only one corral, a reservoir, and one developed spring would be in the designated area. Of the 10 miles of ways used for livestock management in the three allotments in the WSA, wilderness restrictions would be placed on only 3 miles, all in one allotment operated by one permittee. Livestock distribution would remain as at present because three reservoirs proposed to improve distribution of livestock could not be built.

Conclusion: This alternative would result in restrictions on access to about 3 miles of ways in the WSA that are used for livestock management, project maintenance, and access to one corral. Overall there would be inconvenience and slight increased costs for management of an estimated 811 AUMs by one permittee.







# French Spring-Happy Canyon WSA

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# FRENCH SPRING-HAPPY CANYON WSA

(UT-050-236B)

## INTRODUCTION

### General Description of the Area

The French Spring-Happy Canyon WSA consists of 25,000 acres of public land (24,840 acres in eastern Wayne County and 160 acres in Garfield County) about 25 miles southeast of Hanksville, Utah. The area consists of high, narrow ridges and a large mesa cut deeply and abruptly by narrow, sheer-walled, meandering canyons. The French Spring-Happy Canyon is a major side canyon of the Dirty Devil River.

Annual average precipitation in the WSA ranges from about 5 inches in the canyon bottoms to 10 inches at the higher elevations. Temperatures can range from under 0 degrees Fahrenheit (F) in the winter to over 100 degrees F in the summer.

Over half of the WSA consists of bare rock outcrops and steep slickrock canyons. Predominant vegetation in the remaining area includes communities of pinyon-juniper woodland, desert grass, and blackbrush.

The WSA is contiguous with the Glen Canyon NRA along its eastern border and is approximately 6 miles west of the Canyonlands National Park. It shares approximately 2 miles of its western boundary with the BLM Dirty Devil WSA.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. The boundary of the WSA (T. 30 S., R. 16 E., secs. 17, 18 and 19) was inaccurately portrayed in the Draft EIS maps. The Final EIS maps have been revised to coincide with the boundaries established in the BLM Final Wilderness Inventory Decisions document (USDI, BLM, 1980).

2. The anticipated surface disturbance due to mineral exploration and development presented in the Draft EIS (9,170 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. Based on public comments received relative to the feasibility of development, the disturbance estimates

have been revised to focus on projected activities in the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of the predicted surface disturbance from the 9,170 acres reported in the Draft EIS to 9 acres for the short term and an additional 5,550 acres over the long term. The Environmental Consequences section has been revised accordingly.

### Specific Issues Identified Through Scoping and Public Comment

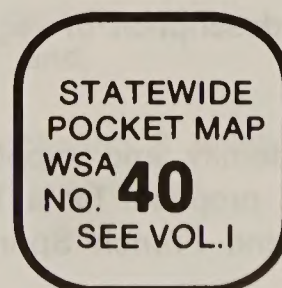
#### • Issues Considered But Not Analyzed in Detail

In addition to the issues of consistency with land use plans and policies and impacts on water rights that were discussed and eliminated from further consideration in the Introduction to Volume IV, impacts on forest resources were discussed in the Draft EIS but are not analyzed in detail in the Final EIS. The only forest resources in the WSA are about 3,750 acres of non-commercial pinyon-juniper woodland. The resource is remote and inaccessible and, therefore, there is no projected demand for use of the resource. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.

#### • Issues Analyzed in Detail

Because of potential long-term impacts from tar sand development, the following issues are analyzed in detail in the Final EIS:

1. Impacts on the wilderness values of naturalness, opportunities for solitude, primitive recreation, and special features.
2. Impacts on air quality, including potential for exceeding PSD standards at Canyonlands National Park.
3. Impacts on geology including fracturing, subsidence and rock falls due to in situ extraction of tar sand bitumen.





## FRENCH SPRING-HAPPY CANYON WSA

4. Impacts on soils including increases in erosion rates and salinity production.
5. Impacts on vegetation including special status species.
6. Impacts on water quality including salinity in the Colorado River system and groundwater pollution.
7. Impacts on mineral exploration and production including uranium exploration and extraction of bitumen from tar sand.
8. Impacts on wildlife habitat and populations including special status species.
9. Impacts on livestock management, particularly vehicular access for management operations.
10. Impacts on the preservation of cultural resources.
11. Impacts on recreational use of the WSA including trade-offs between primitive and vehicular based recreation and impacts of tar sand development on overall recreational use of the region.
12. Impacts on local economic conditions including effects on current and future employment levels in Garfield and Wayne Counties.
5. Editorial errors and mislabeling of the BLM Proposed Action.
6. The use of the French Spring-Happy Canyon WSA alternatives in the Statewide alternatives analyzed in Volume I.
7. Interim management problems in the WSA.
8. The need for a discussion of impacts on regional recreation including tourism in the Canyonlands National Park and the economic impacts of recreation.
9. The need for detailed maps.
10. The need for additional resource inventories.
11. Questions on BLM's estimates of mineral and hydrocarbon potential and the use of tar sand development as the rationale for the Proposed Action.
12. Questions on the relationship of tar sand development to use of water from the Dirty Devil River.
13. Questions on BLM's assessment of wilderness values in the WSA.
14. Need to consider the affects of wilderness designation on salinity-control projects and accessibility of water.

Comments made during the public comment period for the Draft EIS were centered around the feasibility of tar sand development in the Tar Sand Triangle and the use of known tar sand resources as the rationale for the BLM Proposed Action.

Other issues addressed in the public comments include:

1. The adequacy of the BLM Wilderness Inventory.
2. The option of combining the Fiddler Butte, French Spring-Happy Canyon, Little Rockies, and Dirty Devil WSAs with NPS lands; and questions on the relationship of the WSA with other BLM WSAs and NPS lands.
3. Need for more description of vegetation types and wildlife.
4. The need to identify and support the Utah Wilderness Coalition's proposal for a 169,800-acre combined Dirty Devil and French Spring-Happy Canyon WSA.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 40, for responses to specific comments about the French Spring-Happy Canyon WSA.

### DESCRIPTION OF THE ALTERNATIVES

#### **Alternatives Considered and Eliminated from Detailed Study**

A partial alternative to delete intrusions (e.g., the airstrip and road in Happy Canyon) was suggested during scoping. Such a partial alternative was not analyzed because there are no airstrips or roads in the French Spring-Happy Canyon WSA. The two airstrips in the area are south of the WSA boundary.

A suggestion was received during scoping to add a partial alternative to include the scenic area next to the Glen Canyon NRA to complement the NPS wilderness proposal in the NRA. There is, however, no proposed NPS wilderness area in the Glen Canyon NRA



# FRENCH SPRING-HAPPY CANYON WSA

that is adjacent to the French Spring-Happy Canyon WSA. Therefore, such an alternative was not analyzed.

An alternative that would add State lands to the WSA was also suggested during public comment on the Draft EIS as an alternative that would combine the Dirty Devil and French Spring-Happy Canyon WSAs along with 83,000 acres of State, BLM, and NPS land outside the WSAs. Alternatives that would add 13,700 to 15,700 acres of Federal and State lands to the northwest portion of the WSA were also suggested in the public comments. In addition, a partial alternative of undetermined acreage was also suggested as a public comment. This alternative would not avoid conflicts with tar sand resources and would include acreage outside the WSA boundary. These alternatives are not analyzed because the inclusion of State lands would not be consistent with the BLM Wilderness Review Guidelines (refer to Volume VII-B, General Comment Response 6.4); other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1); and the NPS lands were part of the NPS Wilderness Inventory and were not recommended as suitable (USDI, NPS, 1974).

## Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (25,000 acres); and (3) Partial Wilderness (Proposed Action) (11,110 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The assumed management actions presented in the Introduction to Volume IV are also applicable.

### • No Action/No Wilderness Alternative

None of the 25,000-acre WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c). The 639.7 acres of State land within the WSA (refer to Map 1) has not been identified in the MFP for Federal acquisition through exchange or purchase. There are no private or split-estate lands located within the WSA. Acreage figures and quantities in this analysis are for Federal lands only.

### • Management Conditions and Constraints

The entire area would remain open to mineral leasing, location, and sale. All 25,000 acres would be managed as leasing Category 1 (standard stipulations). About 22,480 acres of the WSA are within the Tar Sand Triangle STSA. Approximately 6,360 acres in 11 pre-FLPMA leases are involved in lease conversion applications for tar sand development by in-situ methods (USDI, NPS, and BLM, 1984.) Two post-FLPMA leases (2,020 acres) would also continue. Development work, extraction, and patenting would be allowed on 24 existing mining claims (480 acres) and potential future mining claims. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) without wilderness considerations.

Because of moderate certainty (c3) that uranium is within the WSA, it is projected that uranium exploration would occur in this area in the short term and that development could occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Because of known occurrence of large quantities of tar sand in the WSA, in-situ production of oil from tar sand could occur over the long term. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

The present domestic livestock grazing use (estimated 439 AUMs) of the 25,000-acre area would continue as authorized in the MFP. Use and maintenance of rangeland improvements (i.e., one corral and two wells) would be allowed. A grazing system proposed for the Robbers Roost Allotment, a portion of which is in the WSA, could be implemented. The Flint Trail Allotment was closed to livestock grazing several years ago and would remain unallotted.

The Utah Division of Wildlife Resources (UDWR) would continue desert bighorn sheep reintroduction in the general vicinity, primarily on NPS-administered land.

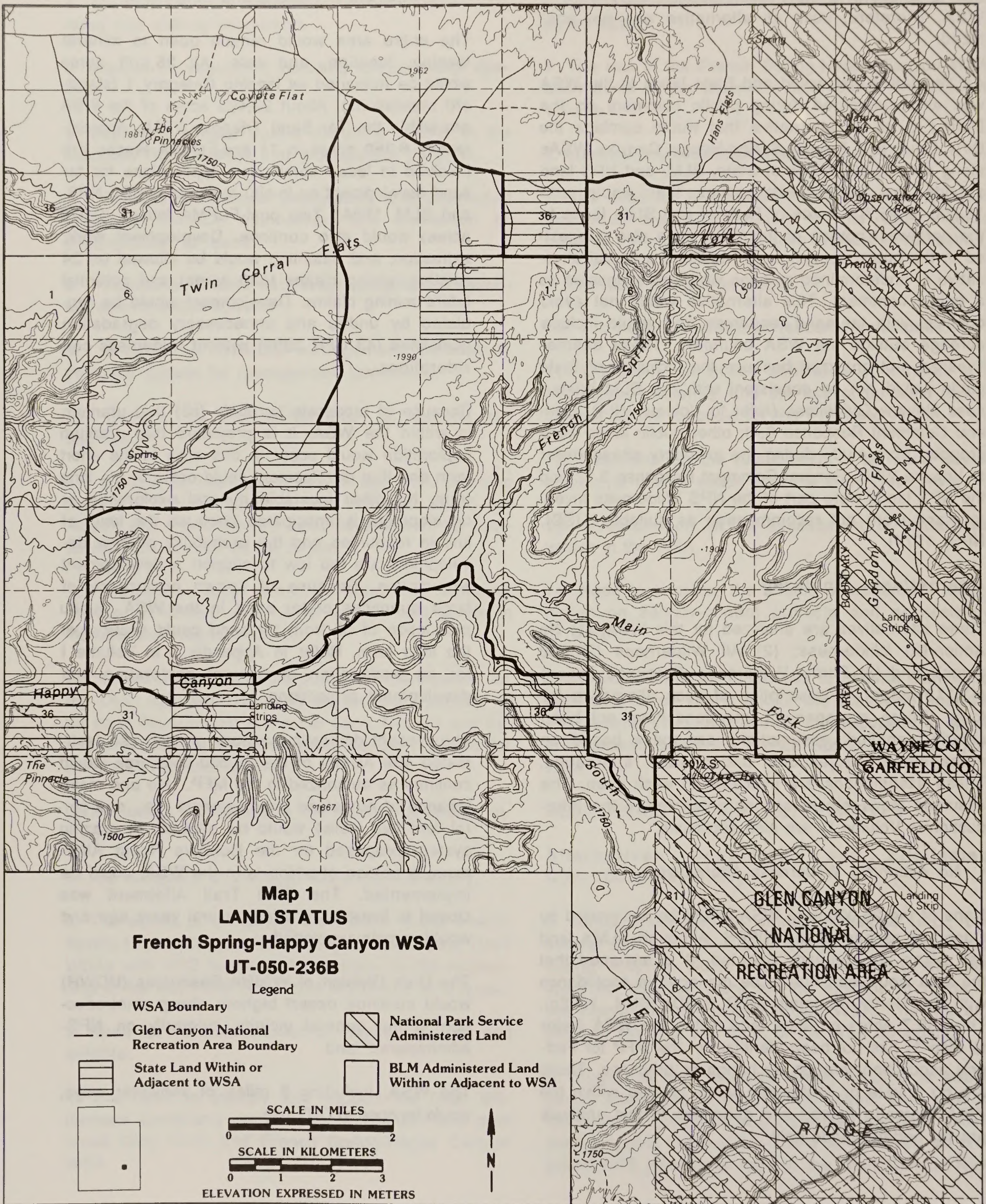
The WSA, including 8 miles of vehicular ways, would be open to ORV use.



# FRENCH SPRING-HAPPY CANYON WSA

R. 15 E.

R. 16 E.



T. 30 S.

## Map 1 LAND STATUS

### French Spring-Happy Canyon WSA UT-050-236B

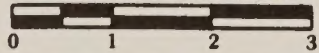
#### Legend

- WSA Boundary
- - - Glen Canyon National Recreation Area Boundary
- ▨ State Land Within or Adjacent to WSA
- ▧ National Park Service Administered Land
- BLM Administered Land Within or Adjacent to WSA

SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



## FRENCH SPRING-HAPPY CANYON WSA

The entire 25,000-acre area would be open to forest product harvest. However, there is no harvest of forest products at the present time, nor is any expected because of low production, scattered resource, and low demand.

The area would continue to be managed under VRM Class II on 13,480 acres and Class IV on 11,520 acres.

### • Action Scenario

A total of 5,559 acres of surface disturbance in the WSA is projected in the foreseeable future with implementation of the No Action/No Wilderness Alternative.

Approximately 9 acres of surface disturbance would occur in the short term. Six acres of the disturbance would result from uranium exploration in the northwestern and southern portions of the WSA. Both areas are accessible from roads along the boundaries of the WSA. However, up to 2 miles of access roads could be necessary with exploratory drilling along and adjacent to these roads. Based on exploration activities typical of the area, it is projected that four employees and 10 days would be spent in exploration activities in the foreseeable future. Exploration activities would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. Access roads and drill sites would be reclaimed following abandonment. Up to 5 years would be necessary to determine successful reclamation. Uranium could be developed in the WSA in the long term. The degree of development is unknown but would likely consist of shafts and mine dumps located along the roads used for exploration.

Approximately 3 acres of disturbance is assumed due to access road construction to a State section (639.72 acres) (T. 30 S., R. 15 E., sec. 2) for mineral and energy exploration purposes.

No rangeland, wildlife habitat, watershed projects, or other developments are planned in the WSA.

There are an estimated 503 million barrels of recoverable oil in the tar sand known to occur under the portion of the WSA that is within the Tar Sand Triangle STSA.

Because of low oil prices, significant environment impacts associated with development of tar sand, and because the Federal Government has not converted existing oil and gas leases in the Tar Sand Triangle STSA to combined hydrocarbon leases to allow for development of the resource, exploration or development of the tar sand is not projected for the short term. However, should the price of oil increase to a sufficient level and the environmental impacts of in-situ production of oil from tar sand be reduced to acceptable levels through reduced recovery rates over long periods of time, or through new technology such as microwave heating, steam injection, etc., development of this resource would be possible in the long term. In the absence of new technology, variances to environmental standards could be granted to allow extraction of oil from the tar sand with current technology.

In order to offset costs associated with development, the entire Tar Sand Triangle deposit would have to be systematically developed throughout the STSA, including that portion located in the Glen Canyon NRA. Therefore, extraction of oil from tar sand inside the WSA would be only part of a much larger tar sand extraction operation in the Tar Sand Triangle STSA.

The following projections are based on factors or ratios presented for in-situ production by current technology (USDI, BLM, 1984):

It is estimated that in-situ production of oil from the tar sand would disturb approximately 40 percent of the 13,890 acres in the WSA above the canyon rims. Approximately 2,750 acres of tar sand resource near and below the canyon rims would not be developed in order to provide a setback to reduce possibilities of rock falls and subsidence of ledges (USDI, NPS and BLM, 1984). Therefore, approximately 5,550 acres of the WSA would be disturbed by drill pads, pipelines, and up to 20 miles of roads. Depending on production levels varying from 5,000 to 30,000 barrels per day, between 1,150 and 6,900 acre-feet of water would be withdrawn from the Dirty Devil River or groundwater sources each year for use in oil production. A work force of about 60 to 350 would be required for 45 to 270 years.



## FRENCH SPRING-HAPPY CANYON WSA

No disturbance due to ORV use is projected because of topographic constraints and remoteness of the area.

Recreational use is expected to increase over the current estimated use of 20 visitor days per year at a rate of 2 to 7 percent annually. As much as 25 percent would occur as motorized recreation on the existing 8 miles of ways and future roads. If tar sand development in the Tar Sand Triangle STSA outside the WSA occurs, the improved access (paved roads) into the area could increase visitation to the nearby NPS Hans Flats Ranger Station by up to 950 percent. The road to Hans Flats Ranger Station forms part of the northern boundary of the WSA. If a similar use increase occurred within the WSA during the high-use season (March to June), this increase would amount to an additional 1.1 visitors per day or 200 visitor days per year (USDI, NPS and BLM, 1984). Increased use in the WSA would thus more likely be closer to the 7 percent rather than the 2 percent level.

- All Wilderness Alternative

With the All Wilderness Alternative (refer to Map 2), all 25,000 acres of the French Spring-Happy Canyon WSA would be designated by an act of Congress as part of the NWPS. It would be managed in accordance with the Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is assumed that the section of State land would remain under existing ownership (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

All 25,000 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the 24 existing mining claims (approximately 480 acres) determined to be valid. It is assumed that some of the mining claims would be valid and would be explored in the short term following wilderness designation. Exploration of these claims would be regulated by the undue and unnecessary degradation guidelines with wilder-

ness considerations. After designation, 11 pre-FLPMA (6,360 acres) and two post-FLPMA (2,020 acres) existing oil and gas leases would be phased out upon expiration unless an oil or gas find in commercial quantities is shown. The pre-FLPMA leases could be converted to combined hydrocarbon (tar sand) leases under the provisions of Public Law 97-78. Oil and gas leases converted to combined hydrocarbon leases in the WSA would contain nonimpairment stipulations and it is assumed that tar sand or oil and gas exploration or development would not occur with this alternative.

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 439 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland improvements existing at the time of designation could continue in the same manner as in the past, based on practical necessity and reasonableness. Existing rangeland improvements include one corral and two wells in this WSA. After designation, new rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources. However, no areas within the WSA have been identified for new rangeland improvements for livestock, although a grazing system has been proposed for the Robbers Roost Allotment, a portion of which is within this WSA (USDI, BLM, 1983b).

UDWR would continue desert bighorn sheep reintroduction in the general vicinity, primarily on NPS-administered land.

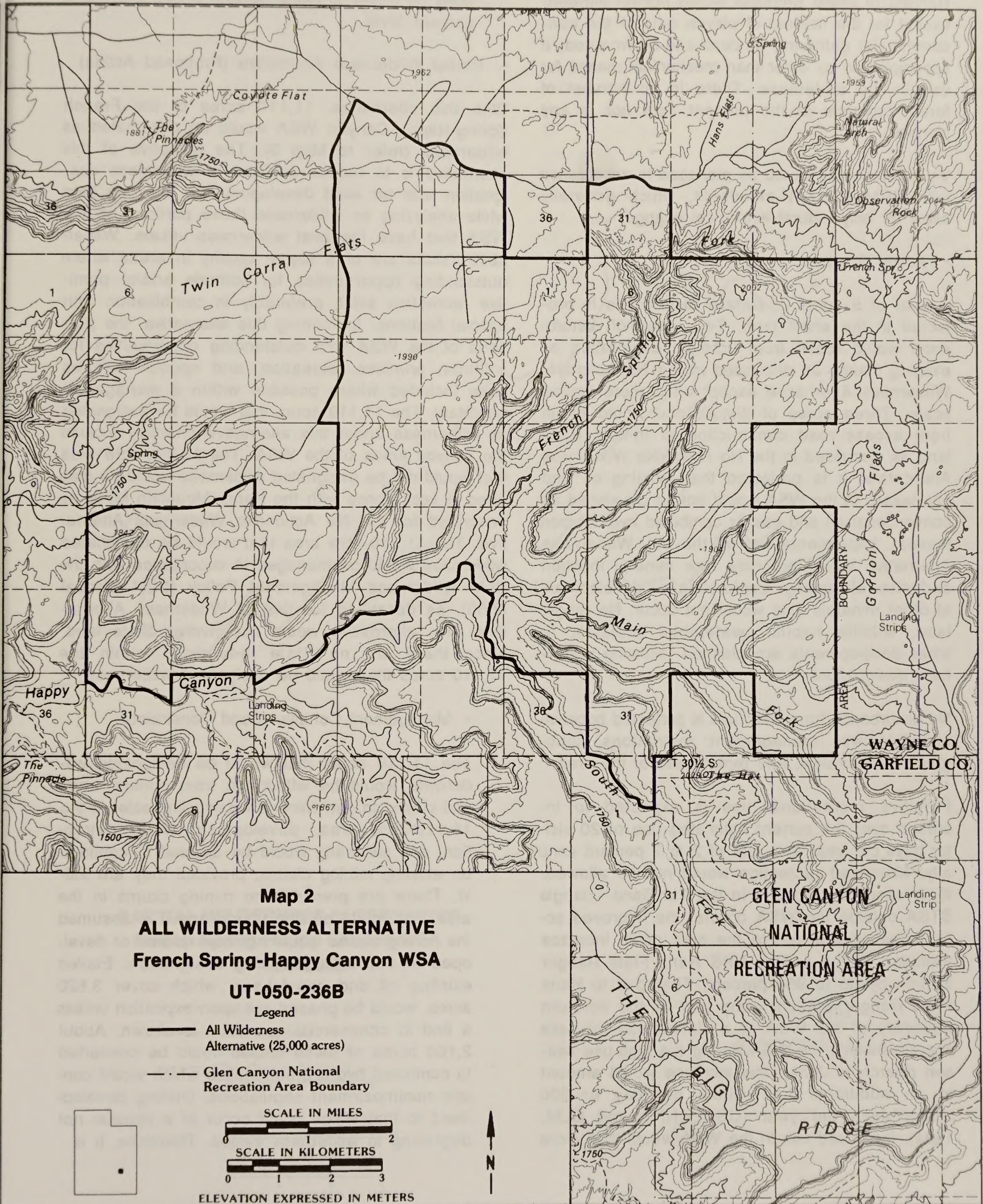
The entire area would be closed to ORV use except for (1) those users with valid existing rights, if approved by BLM in accordance with 43 CFR 8560; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland improvements. About 8 miles of existing vehicular ways not leading to such approved improvements would not be available for vehicular use. About 16 miles (35 percent) of the WSA boundary follow existing unpaved roads, which would remain open to vehicular travel.



# FRENCH SPRING-HAPPY CANYON WSA

R. 15 E.

R. 16 E.

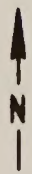
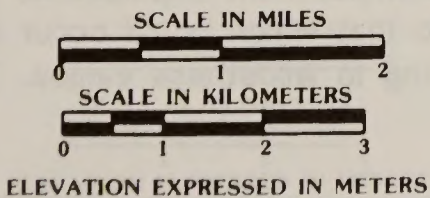
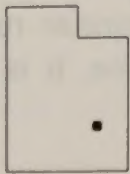


T. 30 S.

T. 31 S.

**Map 2**  
**ALL WILDERNESS ALTERNATIVE**  
**French Spring-Happy Canyon WSA**  
**UT-050-236B**

- Legend
- All Wilderness Alternative (25,000 acres)
  - - - Glen Canyon National Recreation Area Boundary





## FRENCH SPRING-HAPPY CANYON WSA

Harvest of forest products would not be allowed, except for the harvest of pinyon nuts or the non-commercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the wilderness. There is no harvest of forest products at the present time nor is any planned.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

A total of 5 acres of surface disturbance is projected in the short term. Two acres of disturbance would result from uranium exploration on existing claims as discussed in the No Action/No Wilderness Alternative except on a more limited scale. Three acres of disturbance would result from access road construction to in-held State land as discussed in the No Action/No Wilderness Alternative. It is projected that existing oil and gas leases in the WSA would not be developed as conventional oil and gas or combined hydrocarbon leases. Implementation of the All Wilderness Alternative would preclude new mineral location and mineral leasing. Exploration or development of other minerals also would not occur. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

No disturbance from ORV use is projected because of wilderness management restrictions, topographic constraints, and remoteness of the area.

Primitive recreational use is expected to increase over the current estimated use of 20 visitor days per year at a rate of 2 to 7 percent annually. Motorized recreation would not be allowed. If tar sand development in the Tar Sand Triangle STSA outside the WSA occurs, the improved access (paved roads) into the area could increase visitation to the nearby NPS Hans Flats Ranger Station by up to 950 percent. The road to Hans Flats Ranger Station forms part of the northern boundary of the WSA. If a similar use increase occurred within the WSA during the high-use season (March to June), this increase would amount to an additional 1.1 visitors per day or 200 visitor days per year (USDI, NPS and BLM, 1984). Increased use in the WSA would thus more

likely be closer to the 7 percent rather than the 2 percent level.

- Partial Wilderness Alternative (Proposed Action)

With this alternative, 11,110 acres of the French Spring-Happy Canyon WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to reduce conflicts of wilderness designation with tar sand development in the long term while analyzing as wilderness those portions of this WSA that have the best wilderness values. Wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude, primitive recreation, and special features were included where possible within a manageable boundary. The 11,110 acres that would be designated as wilderness under this alternative primarily include the canyon areas of the WSA. The 13,890-acre area that would not be designated wilderness would be managed in accordance with the Henry Mountain MFP, as described for the No Action/No Wilderness Alternative. The 11,110-acre area that would be designated wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560), as described for the All Wilderness Alternative. This alternative would not involve State land, since there are no State in-holdings within the 11,110 acres that would be designated wilderness.

- Management Conditions and Constraints

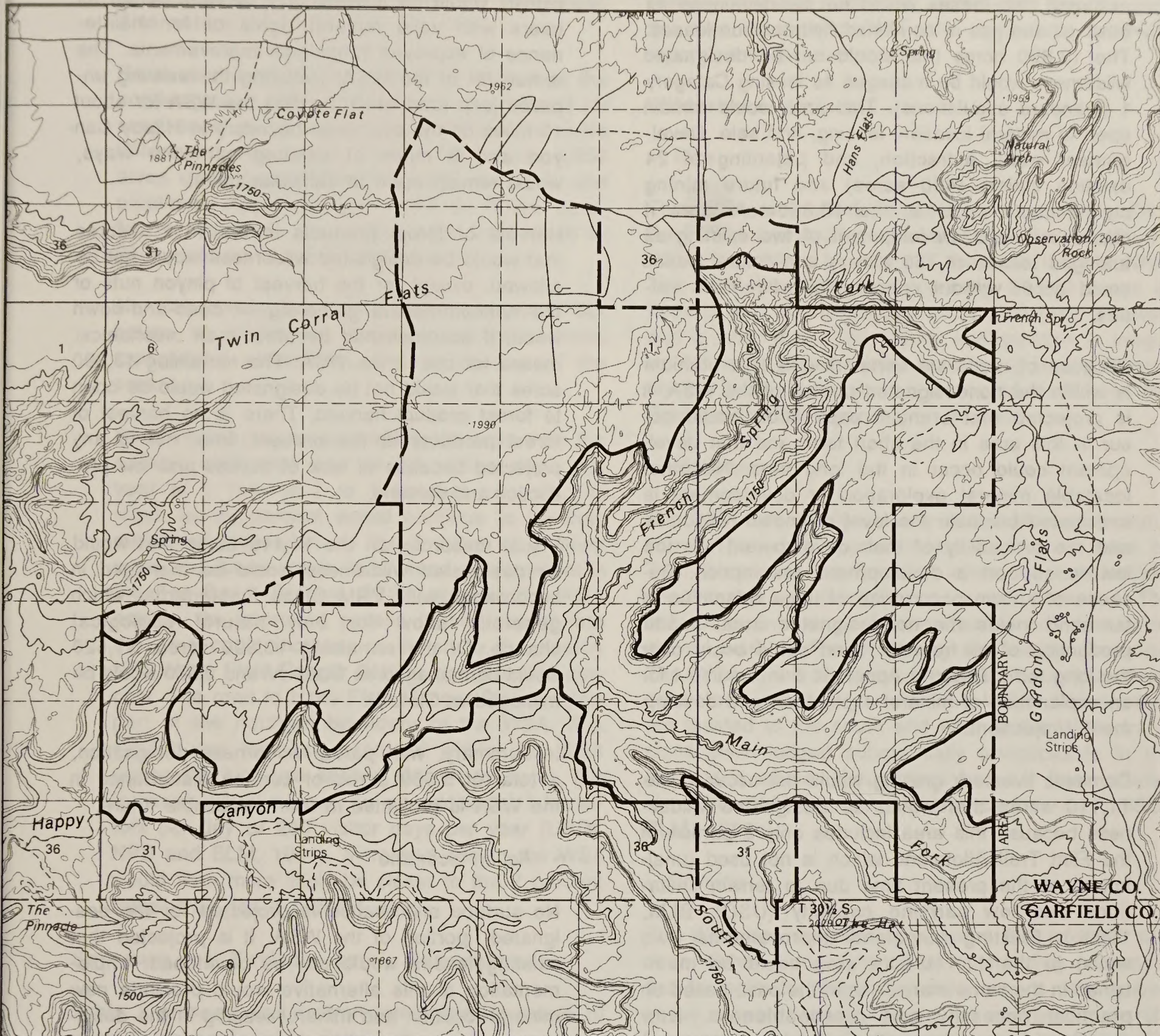
The 11,110 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 11,110-acre area, development work, extraction, and patenting would be allowed to continue on existing mining claims, provided they are valid. There are presently no mining claims in the area that would be designated and it is assumed the mining claims would not be explored or developed in this area following designation. Eleven existing oil and gas leases, which cover 3,620 acres, would be phased out upon expiration unless a find in commercial quantities is shown. About 2,100 acres of these leases could be converted to combined hydrocarbon leases which would contain nonimpairment stipulations, limiting development to that which could occur in a manner not degrading to wilderness values. Therefore, it is



# FRENCH SPRING-HAPPY CANYON WSA

R. 15 E.

R. 16 E.

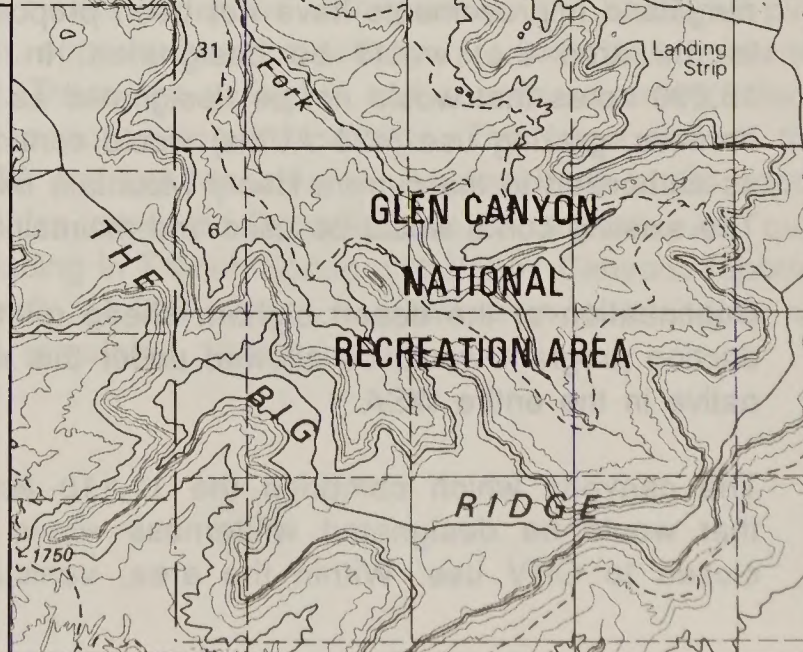
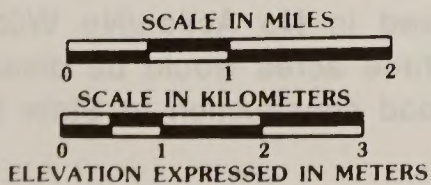
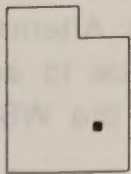


T. 30 S.

**Map 3**  
**PARTIAL WILDERNESS ALTERNATIVE**  
**French Spring-Happy Canyon WSA**  
**UT-050-236B**

Legend

- WSA Boundary
- - - Partial Wilderness Alternative (11,110 acres)
- · · Glen Canyon National Recreation Area Boundary



T. 31 S.



## FRENCH SPRING-HAPPY CANYON WSA

assumed that leases would not be developed as other oil and gas or combined hydrocarbon leases. The 13,890 acres that would not be designated wilderness would be managed as leasing Category 1 (standard stipulations). This area would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting of 24 existing claims (480 acres) and future mining claims could occur in the 13,890-acre area if claims are valid. Development of two existing oil and gas leases (4,760 acres) and future leases could occur without concern for wilderness values.

Because of moderate certainty (c3) that uranium is within the nondesignated portion of the WSA, it is projected that uranium exploration would occur in this area in the short term and that development could occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Because of known occurrence of large quantities of tar sand inside the nondesignated area, in-situ production of oil from tar sand could occur over the long term. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

Domestic livestock grazing would not occur in the 11,110 acres that would be designated wilderness because this area includes only a portion of the Flint Trail Allotment, which is not used (unallotted) at the present time due to terrain limitations and low carrying capacity (USDI, BLM, 1983b). Existing rangeland improvements (two wells) in the 11,110-acre area could be maintained in the same manner as in the past, based on practical necessity and reasonableness. New rangeland improvements have not been proposed in the area that would be designated. In the 13,890 acres that would not be designated as wilderness, grazing use (439 AUMs) would continue as authorized in the current Henry Mountain MFP. The existing corral would be used and maintained.

Continuation of the desert bighorn sheep reintroduction program would be allowed under this alternative in the entire WSA.

The canyons which comprise the 11,110 acres that would be designated wilderness would be closed to ORV use. Within the area, vehicular

activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. The remainder of the WSA, including the existing unpaved jeep road which borders the WSA for about 10 miles on the southwest boundary in Happy Canyon and 8 miles of existing vehicular ways, would remain open to vehicular travel.

Harvest of forest products in the 11,110 acres that would be designated wilderness would not be allowed, except for the harvest of pinyon nuts or the noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means for use in the WSA. The remaining 13,890 acres that would not be designated would be open to forest product harvest. There is no harvest of forest products at the present time, nor is any projected because of lack of access and low production and demand.

Visual resources on the 11,110 acres that would be designated wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. Of the remaining 13,890 acres, 11,520 would be managed as Class IV and 2,370 would be managed as Class II.

In summary, with partial wilderness designation, a total of 5,559 acres of surface disturbance in the WSA is projected in the foreseeable future.

### • Action Scenario

No surface disturbance is projected for the designated portion of the WSA. It is projected that existing leases would not be developed. Implementation of this alternative would preclude new mineral location and mineral leasing in the designated portion. Therefore, no leasable mineral resources exploration or development, including tar sand, would occur in this area following wilderness designation. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

It is projected that 9 acres of surface disturbance would occur in the nondesignated portion of the WSA in the short term. Six acres of disturbance would result from uranium exploration as discussed in No Action/No Wilderness Alternative. Three acres would be disturbed due to access road construction to State land in the WSA



# FRENCH SPRING-HAPPY CANYON WSA

as discussed in the No Action/No Wilderness Alternative.

Because the tar sand resource is located in the nondesignated area, long-term development of tar sand would be as described for the No Action/No Wilderness Alternative. In the long term, 5,550 acres would be disturbed by roads, drill pads, and pipelines. Approximately 1,150 to 6,900 acre-feet of water per year and a work force of 60 to 350 would be required for 45 to 270 years.

No disturbance from ORV use is projected because of wilderness management restrictions, topographic constraints, and remoteness of the area.

Recreational use is expected to increase over the current estimated use of 20 visitor days per year at a rate of 2 to 7 percent annually. As much as 25 percent would continue to be from motorized recreation on the 8 miles of existing ways and future roads. If tar sand development in the Tar Sand Triangle STSA outside the WSA occurs, the improved access (paved roads) into the area could increase visitation to the nearby NPS Hans Flats Ranger Station by up to 950 percent. The road to Hans Flats Ranger Station forms part of the northern boundary of the WSA. If a similar use increase occurred within the WSA during the high-use season (March to June), this increase would amount to an additional 1.1 visitors per day or 200 visitor days per year (USDI, NPS and BLM, 1984). Increased use in the WSA would thus more likely be closer to the 7 percent rather than the 2 percent level.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

### • Size

This WSA is located immediately east of the Dirty Devil WSA and south of the Horseshoe Canyon (South) WSA. Its eastern boundary is the Glen Canyon NRA. The WSA contains approximately 25,000 acres of Federal land and is about 7 miles wide (east to west) and 6 miles long. This WSA's configuration is irregular, following a road on the meandering Happy Canyon on the south, roads on the west and north, and the Glen Canyon NRA boundary on the east.

### • Naturalness

The WSA has no significantly noticeable human intrusions. There are approximately 8 miles of ways on Twin Corral and Gordon Flats which are substantially unnoticeable and rehabilitating by natural means. The only other intrusions are one corral and two unimproved wells in French Spring and Happy Canyons. The WSA is bordered on the south by a four-wheel drive road which is outside the WSA. Old airstrips are located to the south and east of the WSA. Intrusions were judged substantially unnoticeable in the area as a whole. Naturalness has not been altered since the BLM Intensive Wilderness Inventory (USDI, BLM, 1980b).

### • Solitude

The WSA has meandering canyons 600 to 1,000 feet deep. Other topography offers outstanding opportunities for solitude. Vegetation screening is very sparse in the canyon bottoms. Above the canyon rim on rolling mesas vegetated with grasses and scattered pinyon, opportunities for solitude are less than outstanding. There are no sights and sounds adversely affecting opportunities for solitude. The large size of the WSA and low recreational use contribute to the opportunities present. Opportunities for solitude are outstanding in French Spring and Happy Canyons (approximately 11,000 acres) but less than outstanding on the remaining 14,000 acres.



# FRENCH SPRING-HAPPY CANYON WSA

Table 1  
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness	Partial Wilderness (11,110 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. Naturalness and opportunities for solitude and primitive recreation would be directly lost on 9 acres because of uranium exploration and development and construction of access to State in-held lands, and indirectly reduced in quality on up to 1,500 acres more in the short term. In the long term, naturalness and opportunities for solitude and primitive recreation would be directly lost on up to 5,550 acres because of tar sand development and indirectly reduced in quality throughout the WSA. Special features would be disturbed. Vehicular use of ways and mining roads would be an annoyance to those seeking solitude and primitive recreational activities.	Wilderness values would be protected from direct disturbance in the designated area which includes approximately 44 percent of the WSA. In the nondesignated area, naturalness and opportunities for solitude and primitive recreation would be directly lost on 9 acres because of uranium exploration and development and construction of access to State in-held lands and indirectly reduced in quality on up to 1,500 acres more in the short term. In the long term, naturalness and opportunities for solitude and primitive recreation would be directly lost on up to 5,550 acres because of tar sand development and the quality of these values would be indirectly reduced throughout the WSA including the designated portion. All direct impacts would be in the nondesignated area. Most of the Class A scenery and bighorn sheep habitat would be preserved but cultural values and endangered and sensitive animal species would be disturbed. Use of vehicular ways and mining roads in the nondesignated portion would be an occasional annoyance that would detract from opportunities for solitude and primitive recreation.
	Wilderness designation would preserve wilderness values overall throughout the WSA. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 5 acres and would be indirectly reduced in quality on up to 1,000 acres. Special features would be preserved.	
Impacts on Air Quality	Over the short term, air quality would not be reduced by activities in the WSA. Without new technology for extraction of oil from tar sand, long-term development would reduce air quality and with variances could exceed PSD Class I limitations in the Canyonlands National Park for 45 to 270 years.	Without new technology for extraction of oil from tar sand, long-term development would reduce air quality and with variances could exceed PSD Class I limitations in the Canyonlands National Park for 45 to 270 years.



# FRENCH SPRING-HAPPY CANYON WSA

Table 1 (Continued)  
Summary of Environmental Consequences

		Alternatives	
Resource	No Action/No Wilderness	All Wilderness (25,000 Acres)	Partial Wilderness (11,110 Acres) (Proposed Action)
Impacts on Geology and Topography	In the long term, geologic and topographic features would be altered by tar sand development on 22 percent (5,550 acres) of the WSA.	Geologic and topographic features would not be significantly affected.	Impacts on geologic and topographic features would be as described for the No Action/No Wilderness Alternative because the same activities would occur with both alternatives.
Impacts on Soils	Increases in soil erosion would be significant (0.28 percent increase in the WSA) on a localized basis. Because of required reclamation and mitigation and because of low precipitation and flow in the drainage, increases in sediment discharges to the Dirty Devil River would be small.	A projected 0.03-percent increase in soil erosion would not be significant.	Impacts would be essentially the same as with the No Action/No Wilderness Alternative. Increases in the soil erosion would be significant on a localized basis. Discharges into the Dirty Devil River would not be significant.
Impacts on Vegetation	Over the long term, composition of vegetation types would be altered or destroyed on 22 percent (5,550 acres) of the WSA (50 percent of the vegetated area). Special status plant species are not known to occur in the WSA and would not be affected.	Composition of existing vegetation types would be preserved.	Impacts would be the same as with the No Action/No Wilderness Alternative. Over the long term, composition of vegetation types would be altered or destroyed on 22 percent (5,550 acres) of the WSA (50 percent of the vegetated area).
Impacts on Water Resources	Water quality, quantity, and uses would not be affected in the short term. Over the long term, tar sand development would reduce the quality of groundwater, reduce salinity in the Colorado River, and compete with the flow of the Dirty Devil River, and compete with other potential consumptive water uses in the Dirty Devil River system.	In the short term, ground and surface water quality and quantity would not be affected. In the long term, groundwater quality could be reduced by tar sand development outside the WSA.	Over the long term, tar sand development would reduce the quality of groundwater, reduce salinity in the Colorado River, and compete with other potential water uses in the Dirty Devil River system.



# FRENCH SPRING-HAPPY CANYON WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (25,000 Acres)	Partial Wilderness (11,110 Acres) (Proposed Action)
Impacts on Mineral and Energy Exploration and Production	This alternative would not adversely affect mineral exploration or production because mineral leasing, location of mining claims, and development of minerals would continue without restrictions for protection of wilderness values.	The long-term potential for production of 503 million barrels of oil from tar sand and an unknown amount of uranium oxide would be foregone.	This alternative would not significantly affect mineral production or exploration because the uranium and known tar sand areas would be in the nondesignated area and could be explored and developed without wilderness management restrictions.
Impacts on Wildlife Habitat and Populations	Over the long term, tar sand development would reduce available habitat for special status and most other species. Populations of some species would be reduced. Reclamation efforts would improve habitat for some species. Substantial value yearlong desert bighorn sheep habitat would not be disturbed.	Wildlife habitat and populations would be protected and would benefit from solitude.	Impacts would be essentially the same as with the No Action/No Wilderness Alternative. However, wildlife would benefit from provision of solitude on 44 percent (11,110 acres) of the WSA.
Impacts on Livestock Management	In the long term, available livestock forage in one allotment would be reduced by 4 percent for the duration of tar sand activities.	Restrictions on access would result in inconvenience and slight increases in management costs for one livestock permittee.	In the long term, available livestock forage in one allotment would be reduced by 4 percent for the duration of tar sand activities. Access to the 8 miles of ways would not be restricted and livestock management would not be affected.
Impacts on Visual Resources	Visual resources would be degraded throughout the WSA and VRM objectives would not be met on directly disturbed areas (5,550 acres).	Visual resources would be preserved because the potential for disturbance would be reduced to about 5 acres.	Impacts on visual resources would be the same as with the No Action/No Wilderness Alternative. Visual resources would be degraded throughout the WSA and VRM objectives would not be met on directly disturbed areas (5,550 acres).



# FRENCH SPRING-HAPPY CANYON WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (25,000 Acres)	Partial Wilderness (11,110 Acres) (Proposed Action)
Impacts on Cultural Resources	Inadvertent loss or damage of archaeological sites may occur due to surface development and/or continued ORV use. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resource management would continue without wilderness management constraints.	All cultural resource management procedures would be subject to restrictions. The benefits of protection from most surface disturbance would outweigh potential damage from increased vandalism due to wilderness designation. Closure to all vehicular access would protect sites from damage and decrease accessibility in the unit.	Impacts would be approximately the same as with the No Action/No Wilderness Alternative because the same disturbance would occur. Only two recorded sites would receive protection as a result of wilderness designation under this alternative. The remaining 28 sites would be in the nondesignated area and would be protected by existing law.
Impacts on Recreation	Opportunities for vehicular-based recreation would be maintained. Over the long term, opportunities for primitive recreation would be eliminated from the portion of the WSA above the canyon rims and reduced in quality in adjacent WSAs and proposed wilderness in the Glen Canyon NRA. Approximately 8 miles of vehicular ways would remain open for vehicular use.	This alternative would benefit primitive recreation by reducing surface-disturbing activities and increasing management attention and recognition of wilderness values. Although eliminated from the WSA, vehicle-based recreation would not decline on a regional basis because there are other more suitable ORV use areas in the vicinity of the WSA.	Primitive recreation opportunities would be protected on 44 percent (11,110 acres) of the WSA below the canyon rims. Approximately 8 miles of vehicular ways would remain open for vehicular use. Long-term impacts of tar sand development would be as analyzed for the No Action/No Wilderness Alternative.
Impacts on Economic Conditions	Economic conditions would not be affected in the short term. In the long term, there would be major beneficial and adverse effects on all economic sectors and infrastructures in Wayne, Garfield, and possibly Emery Counties from tar sand development.	Economic conditions would not be significantly changed in the short term. In the long term, major beneficial or adverse impacts of tar sand development on economic sectors and infrastructures of Wayne, Garfield, and possibly Emery Counties would not occur.	Economic conditions would not be affected in the short term. In the long term, there would be major beneficial and adverse effects on all economic sectors and infrastructures of Wayne, Garfield, and possibly Emery Counties from tar sand development.



# FRENCH SPRING-HAPPY CANYON WSA

- Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the various recreational opportunities present, and evaluation of the quality of those opportunities. This WSA was determined to have outstanding opportunities for one activity (geological sightseeing) in the canyons. Photography, dayhiking, and scenic sightseeing were rated as average in quality. The longest hiking route is 11.1 miles from Gordon Flats to Happy Canyon via French Spring Canyon. Recreational opportunities are somewhat restricted by topography; mesas limit these opportunities. Thus, in the canyon portions, there are about 11,000 acres with outstanding recreational opportunities (the same 11,000 acres that offer outstanding opportunity for solitude), but on the remaining 14,000 acres (consisting of mesas) opportunities are less than outstanding.

- Special Features

The WSA's exceptional scenic values on 13,480 acres (54 percent of the WSA) were identified as a special feature during the wilderness inventory. This same 54 percent of the WSA is rated Class A for scenic quality.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. The WSA has at least one known archaeological site eligible for nomination to the National Register of Historic Places. The endangered peregrine falcon and black-footed ferret may occur in the WSA. In addition, there are nine animal species that are considered sensitive (FWS candidate or BLM sensitive). The WSA may have desert bighorn sheep which is a wilderness-associated species. Refer to the Wildlife Including Special Status Species section for additional information.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and galleta threeawn shrub steppe. Refer to the Vegetation Including Special Status Species section for more discussion of ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation Units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, and Provo-Orem, Utah.

## Air Quality

Air quality in the French Spring-Happy Canyon WSA is designated as a PSD Class II area under the provisions of the Clean Air Act as amended. Nearby Class I areas are at Canyonlands National Park (6 miles east) and Capitol Reef National Park (29 miles west). Local, regional, and distant pollutant sources do not alter the area's very good to excellent air quality and visibility. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979).

## Geology and Topography

The WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. The WSA lies along the southern limb of a large structural trough that separates the San Rafael Swell to the northwest from the Monument Upwarp to the southeast.

Rocks at the surface of the WSA are of Permian, Triassic, and Jurassic ages and belong to the following formations: the Moenkopi, Chinle, Wingate, Kayenta, Navajo, and Carmel. The overall structure of the WSA is a smooth, west-dipping homocline, disrupted slightly by a northwest-trending system of grabens that extends into the WSA from the vicinity of The Needles fault zone 10 miles to the southeast (Jackson, 1983).

Landforms in this WSA include mesas, buttes, spires, arroyos, rounded slickrock domes, sand dunes, alluvial fans and terraces; and sheer-walled, meandering, deeply cut canyons (600-1,000 feet deep). Elevations range from approximately 4,200 feet at the bottom of canyons to about 6,500 feet on the plateaus.

## Soils

About 56 percent (14,000 acres) of the WSA is sandstone rock outcrop and steep slickrock canyons. The remaining areas consist of semidesert sands, shallow sandy loams, and sandy bottom soils. Most of this area has a soil erosion condition rating of moderate. Erosion condition was determined using soil surface factors and is summarized in Table 2. Sediment yields vary from moderate to high.



# FRENCH SPRING-HAPPY CANYON WSA

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	7,680	31	20,736
Moderate	1.3	13,480	54	17,524
Slight	0.6	3,840	15	2,304
Stable	0.3	0	0	0
Total		25,000	100	40,564

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

Soil salinity class estimates range from nonsaline to moderate with an estimated average salinity production of 62 lb of salt per acre per year.

Seeding potential varies from unsuited to seeding to poor due to steep slopes, rock outcrops, and sandy (droughty) and shallow soils. Portions of the WSA have deeper soils on moderate slopes which provide for fair to good seeding success.

## Vegetation Including Special Status Species

Fifty-six percent (14,000 acres) of the WSA consists of bare rock outcrops and steep slickrock canyons which contain little or no vegetation. Predominant vegetation in the remainder of the WSA includes pinyon-juniper woodland, desert grass, and blackbrush communities in association with assorted shrubs and forbs. Existing vegetation types are summarized in Table 3.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Barren (rock outcrop, badlands)	14,000	56
Pinyon-juniper woodland	3,750	15
Mid grasses	3,250	13
Blackbrush	2,000	8
Desert shrub	2,000	8
Total	25,000	100

Source: USDI, BLM, 1983b

No special status plant species are known to occur in the WSA (see Appendix 4 in Volume I).

The French Spring-Happy Canyon WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 4.

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	11,000	44
Galleta-threawn shrub steppe	14,000	56
Total	25,000	100

Source: USDI, USGS, 1978.

## Water Resources

The French Spring-Happy Canyon WSA lies within the Dirty Devil River subbasin of the Upper Colorado River hydrologic subregion. There are two wells and a spring in the WSA, but no perennial surface streams.

This WSA is within Water Rights Adjudication Area 95. The 95 area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit. Temporary and fixed time applications over 0.015 on the Dirty Devil River outside the WSA could be considered (UDNRE, DWR, 1988).

Since the surface waters of this WSA drain into the Dirty Devil River, the water quality standard for the Dirty Devil River and tributaries, from Lake Powell to Fremont River, applies and is Class 3C (protected for nongame fish and other aquatic life).

Utah's 1986 305(b) Water Quality Assessment Report shows the Dirty Devil River to have impairments to its beneficial uses from high levels of TDS and sodium from probable source categories of natural sources, agriculture-irrigated cropland, and grazing.

## Mineral and Energy Resources

The energy and mineral resource rating summary is given in Table 5. Refer to Appendix 5 in Volume I for a detailed description of the SAI rating system.

The WSA could contain deposits of copper that is currently listed as a strategic and critical material (USDoD, 1988). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand.



# FRENCH SPRING-HAPPY CANYON WSA

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Tar Sand	f4	c4	503 million barrels of oil
Copper	f2	c2	Less than 50,000 metric tons
Uranium	f2	c3	Less than 500 metric tons of uranium oxide concentrate
Coal	f1	c4	None
Geothermal	f1	c4	None
Gold	f1	c3	Little to none
Silver	f1	c3	Little to none

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

## • Leasable Minerals

With the exception of the tar sand resource, there are no known deposits of any leasable minerals in the WSA. There are no active drilling, mining, or exploration activities for leasable minerals.

## • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin, which has oil and gas production established to the east; the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them; the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and the lack of any oil and gas production established from any of the oil and gas wells drilled in the area. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic feet of gas (f2).

The WSA has a moderate potential for hydrocarbon accumulations in stratigraphic and structural traps within Mississippian and Pennsylvanian rocks (Molenaar, et al., 1983). According to the USGS, the area has a moderate potential for oil

and gas based on reported oil shows in 14 of the 36 wells drilled in the vicinity of the WSA that they studied (USDI, USGS, 1985).

The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. The WSA is in an area within the basin where Pennsylvanian and Permian sedimentary facies change to carbonate from basinal shales and evaporates. This facies change is favorable for the formation of stratigraphic hydrocarbon traps. In addition, due to the WSA's position within the Paradox Basin, where the basin changes from a penesaline facies to carbonate shelf facies, the possibility exists for bioherm and oolite shoal buildups within Mississippian and Pennsylvanian rocks. It is possible that as oil accumulated and moved through the rocks within the basin, it may have become pooled within these stratigraphic traps. Evidence suggests oil has moved through the sedimentary rocks in the area and resulted in the oil impregnated rock deposit within the Tar Sand Triangle.

Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to contain 3 to 5 million barrels of oil each, and average 40 to 80 acres in size in the eastern portion of the Paradox Basin.

Several exploration wells have been drilled within or adjacent to the WSA. Most wells have, however, been drilled to test the oil potential within the White Rim sandstone, the main tar sand-bearing unit in the area. Few wells in the vicinity of the WSA have penetrated rocks of Mississippian or Pennsylvanian age. All wells were plugged and abandoned.

Based on the available information, the certainty of occurrence for oil and gas is rated low (c2). The certainty that these small, scattered accumulations exist in the area is low based upon the WSA's location within the Paradox Basin and the lack of deep wells in the area.

Under the current land use plan, all 25,000 acres in the WSA are in Category 1 (standard stipulations). There are presently 11 pre-FLPMA oil and gas leases covering 6,360 acres and two post-FLPMA leases covering 2,020 acres. The pre-FLPMA leases are under application for conversion to combined hydrocarbon leases.



# FRENCH SPRING-HAPPY CANYON WSA

## • Tar Sand

There is an estimated 5 billion barrels of oil in the White Rim Sandstone Member of the Cutler Formation and 4 million barrels in the Cedar Mesa Member of the Cutler and Moenkopi Formations. The above estimates are for the oil impregnated rock deposit within the Tar Sand Triangle as a whole. Within this deposit, there is one dominant pay zone of heavy oil impregnated sandstone within the White Rim sandstone. For the deposit, the thickness of the pay zone varies from 0 to 230 feet. The average net pay zone is 112 feet and the average grade is 3.6 gallons of oil per ton of rock. Approximately 26 square miles (16,640 acres) of the WSA is underlain by the tar sand deposit (as defined by the 0-foot isopach map of the net pay zone). The thickness of the deposit within the WSA ranges from 0 to approximately 230 feet. Therefore, the estimated average thickness of tar sand within the WSA is 115 feet.

Using these figures, the estimated oil reserve from tar sand within the WSA is approximately 503 million barrels of recoverable oil. Using the criteria presented by SAI (1982), there is potential for a large sized tar sand resource, with a high degree of certainty that the deposit exists (f4/c4).

Approximately 20,480 acres of the WSA are located in the Tar Sand Triangle STSA, of which, 6,360 acres are under application for conversion to combined hydrocarbon leases.

## • Locatable Minerals

There are no known deposits of locatable minerals in the WSA. There are approximately 24 mining claims covering 480 acres of the WSA.

## • Uranium

The principle uranium-bearing strata is the area of the WSA is the Triassic Chinle Formation, specifically the Shinarump, Mossback, and Monitor Butte Members. The Shinarump, however, is not present within the WSA and the Mossback facies present is a blanket-like deposit and not conducive to uranium mineralization. The Monitor Butte Member is present in the area and is favorable for uranium mineralization for several reasons. It is of an irregular lithologic character representative of paleostream channels and it contains inter-

fingering carbonaceous mudstone and sandstone and authigenic dolomite (USDI, USGS, 1985; USDI, USBM, 1984c). The Monitor Butte Member underlies essentially all of the WSA. In the northeastern portion of the WSA, however, the member does not appear to contain the authigenic dolomite, carbonaceous mudstone or beds of a facies representative of the uranium-bearing paleofluvial systems. In the southwestern portion of the WSA, the characteristics favorable to uranium mineralization have been identified in and around the WSA. Anomalous radioactive areas were found within and around the WSA. These areas are associated with local carbonized and silicified wood and plant material. Uranium grade from mines and prospects in the vicinity of the WSA ranged from a trace to 0.087 percent uranium (USDI, USBM, 1984c). Low grade uranium mineralization in a paleochannel trunk feeder system was encountered in the Monitor Butte Member a few miles west of the WSA. Based on this information, the WSA as a whole has a potential for small discontinuous uranium deposits. A higher potential exists in the southwestern portion of the WSA due to identified characteristics favoring uranium mineralization. Therefore, the WSA is rated (f2), having potential to contain less than 500 metric tons of uranium oxide in the Monitor Butte Member of the Chinle Formation. The certainty that uranium exists in the area is moderate (c3), based on anomalous radiation readings, the presence of mines and prospects, and an identified low grade uranium deposit near the WSA.

## • Gold, Silver, and Copper

Stream sediment and panned concentrate stream sediment samples showed evidence of isolated mineral occurrences of gold, silver, lead, copper and molybdenum (USDI, USGS, 1985a). No mineralized areas containing these elements were found however. The rocks exposed in the tract are all sedimentary in nature and, with the exception of copper, have a low potential of occurrence for these resources. Copper is commonly found in association with uranium in the area and was reported in the sampling program conducted by the USGS and USBM. The potential for these resources, excluding copper, to exist within the WSA is very low with a moderate degree of certainty (f1/c3). Copper may exist in small quantities in association with uranium within the WSA (f2), but the certainty that it does exist is low (c2).



# FRENCH SPRING-HAPPY CANYON WSA

## • Salable Minerals

There are no commercial deposits of salable minerals in the WSA. Scattered deposits of sand, gravel, and building stone exist; however, these deposits are common in the area and there are deposits closer to existing and possible future market areas.

## Wildlife Including Special Status Species

Several species of wildlife may be found in the WSA. These include mule deer, antelope, chukar, dove, and cottontail. Other species occasionally seen include fox, coyote, badger, weasel, bobcat, other small animals (such as the side-blotched lizard), as well as a few species of birds. The WSA contains about 2 percent of the habitat for Deer Herd Unit 29. This herd unit covers the San Rafael Desert; however, deer are principally distributed along the river bottoms, especially the Price River, all of which are outside the WSA (UDNRE, DWR, 1977).

The area also provides less than 15 percent of the habitat for Antelope Herd Unit 9. This herd is widely scattered and distribution is limited by the availability of water (UDNRE, DWR, 1982). Pronghorn antelope need up to 1.2 gallons of water per animal per day during the peak of summer (Salwasser, 1980). Also, most pronghorn antelope are found within 4 miles of a water source.

UDWR introduced desert bighorn sheep onto the nearby Orange Cliffs in 1982 and some of these animals may migrate into the WSA as it contains historic habitat for this species. UDWR has identified about 11,110 acres of this WSA (44 percent) as substantial value yearlong desert bighorn sheep range. Substantial value habitat is a low to high use area for wildlife that is of high interest to the State of Utah. Refer to the Glossary for a complete definition. However, the lack of water is the single most limiting factor for bighorn sheep herds in the desert (Monson and Sumner, 1980). As previously stated, there is only one spring in the WSA, and the amount of water produced is not known.

Two endangered species may occasionally inhabit the area, the black-footed ferret and peregrine falcon. Four Category 2 candidate species, Tanner's black camel cricket, Great Basin Silverspot butterfly, ferruginous hawk, and white-faced ibis, may also frequent the area (see Appendix 4 in Volume I). Seven species of wildlife that BLM considers sensitive may

be found in the WSA from time to time. These are listed in Table 6.

Table 6  
BLM Sensitive Species

Sensitive Species	Scientific Name
Many-lined skink	<u>Eumeces multivirgatus</u>
Golden eagle	<u>Aquila chrysaetos</u>
Bell's vireo	<u>Vireo belli</u>
Grasshopper sparrow	<u>Ammodramus savannarum</u>
Dwarf shrew	<u>Sorex nanus</u>
Spotted bat	<u>Euderma maculata</u>
Chuck walla	<u>Saceromalus obesus</u>

Source: Appendix 4 in Volume I and BLM File Data.

There is no critical habitat within the WSA. There are no existing wildlife developments and none are planned.

## Forest Resources

There are no significant forest resource values in this WSA. Only 15 percent of the WSA (3,750 acres) is classified as pinyon-juniper woodland, and the trees are scattered and of poor quality. Also, the WSA is in a remote location and access is poor. There has been no use of the forest resource nor is any anticipated because of low production, low demand, and lack of access.

## Livestock and Wild Horses/Burros

The WSA provides forage for cattle in the Twin Corral Flats and Gordon Flats areas of the Robbers Roost Allotment. Rangeland improvements include one corral and two unimproved wells. The canyons are essentially ungrazed because of inaccessibility and lack of forage. No areas within the WSA have been identified for rangeland improvements for livestock benefits; however, a grazing system has been proposed for the Robbers Roost Allotment. The proposed system involves herding and movement of cattle but no additional surface-disturbing activities.

Portions of two grazing allotments, Robbers Roost and Flint Trail, fall within the boundaries of the WSA. The WSA includes 10 percent of the total AUMs of the two allotments involved. Table 7 gives grazing use data on these allotments. The Flint Trail Allotment is closed to grazing and unallotted at this time.

Predator control was not conducted during the 1986 to 1987 period in the allotments that comprised the



# FRENCH SPRING-HAPPY CANYON WSA

Table 7  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Robbers Roost	159,420	13,890	5,288	439	440 Cattle	Yearlong	1
Flint Trail	31,552	11,110	1,322	218 <sup>a</sup>	Unallotted <sup>a</sup>		
Total	190,972	25,000	6,610	657			1

Sources: BLM File Data.

<sup>a</sup>This allotment is not allotted for livestock grazing but may be used on a temporary, as-needed basis while other allotments are being rehabilitated or under an emergency situation.

French Spring-Happy Canyon WSA (USDA, APHIS, 1988).

No wild horses or burros are known to exist in the WSA.

## Visual Resources

The WSA has excellent scenic values. The Twin Corral Flats portion of the WSA consists of a broad, gently rolling benchland mesa covered with grass and scattered pinyon-juniper trees. The Happy and French Spring Canyons deeply and abruptly cut the mesa with sheer-walled, meandering canyons. These are characterized by colorful rock formations and sheer cliffs to the canyon bottoms (600 to 1,000 feet below the mesa) and rounded slickrock domes. Other landforms include buttes, spires, arroyos, rockfalls, alluvial fans, terraces, and sand dunes. The area is not visible from any major travel route. A dirt four-wheel drive travel route borders the WSA on the south side. A principal dirt road to Canyonlands National Park and Glen Canyon NRA borders the north and east sides of the WSA.

The WSA's visual characteristic ratings are shown in Table 8. The Scenic Quality Class A and VRM Class II areas consist of the canyon and rim portions of the WSA. The mesa portions constitute the other classes. (The BLM VRM system is explained in Appendix 7 in Volume I.)

## Cultural Resources

A total of 30 sites have been recorded in the WSA (USDI, BLM, 1988a). All of these sites are prehistoric surface lithic scatters and most of them are quite small in size. Four of the sites contain some

ground stone pieces and two contain fire hearths. One of the sites contains several partially buried hearths and is considered to be eligible for nomination to the National Register of Historic Places. Most of the sites are located on the flat mesa tops of the WSA in sandy deposits or in thin soil overlying the sandstone bedrock. No historic sites have been recorded in the WSA, but several scatters of rusty cans which probably represent sheep camps were noted by surveyors in the area.

Table 8  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	13,480	54
Scenic Quality Class B	8,320	33
Scenic Quality Class C	<u>3,200</u>	<u>13</u>
Total	25,000	100
Management Class I	0	0
Management Class II	13,480	54
Management Class III	0	0
Management Class IV	<u>11,520</u>	<u>46</u>
Total	25,000	100

Source: USDI, BLM, 1982c

Three inventories have been conducted in the WSA. As a result of the inventory for the previous BLM Under the Ledges Planning Unit, a 1-percent sample consisting of two randomly selected 160-acre quadrants have been intensively surveyed within the WSA boundaries. The two quadrants (320 acres) comprise 1.3 percent of the unit and a total of three sites were located within them. Using figures from this inventory, an estimated site density of approximately 215 sites per 23,000 acres was computed. A survey for the Tar Sand Triangle project identified 26 sites in



## FRENCH SPRING-HAPPY CANYON WSA

the WSA (USDI, NPS and BLM, 1984). An estimated average site density of 24 sites per square mile (864 sites per 23,000 acres) was computed for the entire proposed Federal lease area which encompasses most of the WSA. The third survey was an inventory of proposed seismic lines and identified only one site in the unit. These inventories were not specifically designed to examine the WSA, hence, statistics based on them may be unreliable. However, the potential for finding additional sites in the unit is probably exceptionally high. The vast majority of them would probably be small, insignificant lithic scatters, but based on information from adjacent inventory units (USDI, NPS and BLM, 1984) other types of sites such as rock art, rockshelters, habitation sites, or large quarries may also be located in the WSA.

### Recreation

Of the 15 recreational opportunities evaluated for their quality in this WSA, 12 opportunities are present in varying degrees. One activity, geological sightseeing, is of outstanding quality. Three activities (photography, scenic sightseeing, and dayhiking) are of average quality. Backpacking, camping, horseback riding, hunting, nature study, rockhounding, and archaeological and wildlife sightseeing are rated below average (fair to poor).

About 8 miles of vehicular ways in the WSA are available for ORV use even though there is very little ORV use in the area.

Geological sightseeing is considered outstanding because of the many geologic features present, including sheer cliffs, spires, entrenched canyons with rich color variations, and arroyos. These features also provide good opportunities for scenic sightseeing and photography from the canyon rims. Dayhiking opportunities are good within the WSA; the longest hiking routes are approximately 9.8 and 11.1 miles, with an additional 3 miles in Glen Canyon NRA on one route. Hiking routes through the main and side canyons total approximately 31 miles. Backpacking and camping opportunities were rated below average in quality due to the lack of water and attractive campsites and the size and configuration of the area.

There are no data available on recreation use; however, based on management observations, use is low (estimated at 20 visitor days a year) due to limited access and publicity and the presence of other nearby high quality recreational resources. A few commercial permits have been issued since 1980 but com-

mercial outfitters do not use the WSA on a regular basis. Present use is mainly for primitive recreation (15 visitor days per year), while a small amount (5 visitor days per year) involve vehicular access.

### Land Uses Plans

There are no private in-holdings, private subsurface rights, or rights-of-way in the WSA. The WSA is BLM-administered public land except for one State section (639.7 acres). The current policy of the State is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands (see Chapter 1 in Volume I). In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. The in-held State section is under grazing permit and is leased for oil, gas, and hydrocarbons. The only current activity on this land is grazing.

The Final Report, Wayne County Master Planning Project (Call Engineering, 1976), does not address this area specifically, but generally recommends that "... open spaces be used for many purposes rather than strictly as wilderness areas." It also states "... outstanding natural landmarks should be preserved as much as possible."

The Garfield County Master Plan (Five County Association of Governments, 1984) covers portions of this WSA. The master plan recognizes that the county possesses "... some of the most spectacular scenery in the United States ... The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres on one FS unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the French Spring-Happy Canyon WSA, be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation. The Wayne and Garfield County Commissions have endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under the Henry Mountain MFP (USDI, BLM, 1982c) which allows multiple uses as described in the No Action/No Wilderness Alternative. Wilderness is not addressed in the Henry Mountain MFP. However, wilderness designation is part of



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the BLM multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through inclusion of the present plan of No Action/No Wilderness Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

The WSA is adjacent to Glen Canyon NRA. The NPS has proposed that NRA land in this area be classified as a Recreation and Resource Utilization Zone. (This zone would allow grazing and mining activities.)

## Socioeconomics

### • Demographics

The WSA is within Wayne and Garfield Counties, two of Utah's least populated and most rural counties. From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700 an overall increase of about 17 percent. Table 9 presents the baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987, population increased to about 4,085. Population projections for the county indicate that the number of people living in Garfield County in the year 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 9  
Baseline and Projected Population and Employment Growth  
Garfield and Wayne Counties

	1980	1990	2000	2010
<b>Garfield</b>				
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200
<b>Wayne</b>				
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.

The closest community to the WSA is Hanksville, a small community of approximately 350 people, located about 13 road miles to the west.

### • Employment

Wayne and Garfield Counties are among the counties with the lowest average personal income in the State of Utah (South, et al., 1983). Table 9 shows the baseline and projected total employment for Garfield and Wayne Counties to the year 2010.

Garfield County is part of the Southwest MCD. Table 10 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 10  
Southwest Multi-County District  
Employment <sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	6,500	8,100
Nonfarm Proprietors	2,386	3,100	3,500	4,700
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected that by the year 2010, employment in the Southwest MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to 18 percent, and mining will decline to less than 1 percent of the total MCD employment.

Wayne County is part of the Central MCD. Table 11 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the Central MCD will increase by 57 percent. Trade will increase to 17 percent and nonfarm proprietors to 14 percent of the total. Agriculture will decline to 13 percent, government to 17 percent, and mining will decline 1 percentage point to 3 percent of the total MCD employment.



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Table 11  
Central Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, Insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	<u>2,278</u>	<u>2,800</u>	<u>3,300</u>	<u>4,100</u>
Totals	18,400	21,800	25,000	29,000

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Juab, Millard, Piute, Sevier, and Wayne Counties.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 12 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 12  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$16,760
Mining Claim Assessment	\$2,400	0
Livestock Grazing	\$8,780	\$676
Recreational Use	<u>\$ 82</u>	<u>unknown<sup>a</sup></u>
Total	\$11,262	\$17,436

Sources: USDI, BLM, 1982a; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has 24 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

The livestock operator has a total grazing privilege of 439 AUMs within the WSA. One unallocated allotment

is estimated to contain 218 AUMs that are utilized intermittently. Allocated forage in the WSA accounts for \$8,780 of livestock sales and \$2,195 of ranchers' returns to labor and investment.

The WSA's recreational use is low. Related local expenditures are low and are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the French Spring-Happy Canyon WSA is estimated as about 20 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 12).

Oil and gas leases in the WSA cover approximately 8,380 acres. At \$2 per acre, lease rental fees generate up to \$16,760 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the 439 allocated AUMs in the WSA could potentially be used. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$676 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume IV and the Description of the Alternatives for the French Spring-Happy Canyon WSA.

### No Action/No Wilderness Alternative

In the short term, the 9 acres of projected disturbance would affect less than 0.001 percent of the WSA and would not result in significant impacts on any re-



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sources. The following analysis focuses mainly on the affects of tar sand development over the long term.

However, the effects of tar sand development in the long term would be extensive and cannot be analyzed fully in this document. A brief introduction to the effects of tar sand development in the WSA is included. For more information on the impacts of tar sand development in the French Spring-Happy Canyon WSA, the reader is referred to the Tar Sand Triangle Draft EIS (USDI, NPS and BLM, 1984) and the Utah Combined Hydrocarbon Leasing Regional Final EIS (USDI, BLM, 1984c).

### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 13,480 acres).

In the short term, disturbance of approximately 9 acres from uranium exploration mainly in the north and southwest portions of the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Three of these acres of disturbance would be for access to a State section (T. 30 S., R. 15 E., sec. 2). Special features, including Class A scenery, special status species, wildlife associated with wilderness, and cultural values, would not be significantly affected during the short term because the disturbance would be minor involving 0.04 percent of the WSA and the disturbance would generally not be located where the special features are located. Also, appropriate measures would be taken to protect special status species and archaeological values prior to any surface-disturbing activity, and impacts on these values would not be significant during the short term. Refer to the Cultural Resources and Wildlife Including Special Status Species sections for more information.

Disturbance over the long term would involve uranium development in the north and southwest portions of the WSA. It would also involve tar sand development which would disturb approximately 5,550 acres on the mesa top. Naturalness and outstanding opportunities for solitude and primitive recreation would be directly lost in areas of disturbance. Most of the

Class A scenery and bighorn sheep habitat would not be affected but other special features would be disturbed and negatively affected. Refer to the Cultural Resource and Wildlife Including Special Status Species sections.

During the period of activity, the visual and audible disturbance and airborne emissions from mineral exploration and mineral development would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 6 percent (1,500 acres) of the WSA could be so affected in the short term. Over the long term, the effects of tar sand development would indirectly reduce in quality scenic values and opportunities for primitive recreation and solitude throughout the WSA.

Because future vehicular use would generally be limited by terrain to existing vehicular ways, no additional disturbance from ORV activity is anticipated in the future. The continued and increased use of existing ways and future mining roads would detract from opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would not be expected to significantly reduce the quality of wilderness values because the WSA is large enough to adequately incorporate the additional use.

Tar sand development in the Tar Sand Triangle STSA in and near the French Spring-Happy Canyon WSA would indirectly degrade wilderness values in the adjoining Dirty Devil and Horseshoe Canyon (South) WSAs. Also affected would be the Fiddler Butte WSA and proposed wilderness in Glen Canyon NRA and the Canyonlands National Park where sounds and airborne emissions from the energy and mineral developments would degrade solitude, visibility, and primitive recreational values (USDI, NPS and BLM, 1984).

Conclusion: Wilderness values would not be preserved by wilderness designation and loss would occur as intrusions increase. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 9 acres and indirectly reduced in quality on as much as 1,600 acres. Over the long term, naturalness and opportunities for solitude and primitive recreation would be directly lost on up to 5,550 acres of the WSA. Scenic values and opportunities for solitude and primitive recreation would be indirectly reduced in quality throughout most of the WSA.



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- Impacts on Air Quality

If tar sand development were to occur in the Tar Sand Triangle STSA in the long term with current technology, projects would likely include a commercial-scale upgrading plant and an in-situ field that would produce pollutant emissions and hydrocarbon odors similar to a conventional oil refinery and well field (USDI, NPS and BLM, 1984). These emissions would consist of total suspended particulates, sulfur dioxide, carbon monoxide, and volatile organic components that would cause a localized decrease in visibility during the life of the operation, with a potential loss in visual range in the vicinity of Canyonlands National Park. However, the WSA would continue to be managed as a PSD Class II area, and air quality could be reduced only up to the PSD Class II limitations. Also, the proximity of the WSA to Canyonlands National Park may result in further restriction of tar sand development to meet PSD Class I limitations. Studies on proposed in-situ development for the Tar Sand Triangle STSA using current technologies show that PSD limitations would be exceeded at production levels as low as 5,000 barrels per day (USDI, NPS and BLM, 1984). Therefore, production of oil from tar sand in the WSA could only proceed at rates of less than 5,000 barrels per day or be dependent on granting of variances to the PSD standards or development of alternative technologies. Disturbance of 5,550 acres in the WSA would result in increases in fugitive dust emissions with additional potential for loss in visual range in the vicinity of Canyonlands National Park. Because disturbance would proceed over long periods of time, reclamation would reduce impacts from fugitive dust.

Conclusion: Air quality would not be reduced by activities in the WSA in the short term. Without new technology for extraction of oil from tar sand, long-term development would reduce air quality and, with variances, could exceed PSD Class I limitations in Canyonlands National Park.

- Impacts on Geology and Topography

Development of tar sand on 13,890 acres in the WSA by in-situ methods would result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in the WSA (USDI, NPS and BLM, 1984). Potential for these impacts would be reduced by requiring a setback from cliff faces and ledges. Drilling, road construction, and other surface-disturbing activities on 5,550 acres would not alter the overall land-

form but would create localized changes in topographic features.

Conclusion: In the long term, geologic and topographic features would be altered on 22 percent (5,550 acres) of the WSA.

- Impacts on Soils

Up to 5,550 surface acres would be directly affected by tar sand development, however, an undetermined number of other acres would be affected by subsidence and rock fall. Assuming that disturbance would occur equally in areas with critical and moderate erosion classes and that erosion condition would increase one class, soil loss on the 5,550 acres would increase from 11,100 cubic-yards per year to 22,478 cubic-yards per year. Soil loss would decrease as reclamation occurred. The time required for complete reclamation cannot be determined but would probably be at least 5 years. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an estimated 11,378 cubic-yards per year (0.28 percent). Because of requirements for ponds normally enforced on public lands and the small amount of water flow in the drainages of the area, increased sediment yield to the main stream of the Dirty Devil River would be small.

Conclusion: Increases in soil erosion would be significant (0.28 percent) on a localized basis. Increases in sediment discharges to the Dirty Devil River would be small.

- Impacts on Vegetation Including Special Status Species

Approximately 56 percent (14,000 acres) of the WSA consists of bare rock outcrops and steep slick-rock canyons. Forty-four percent (11,000 acres) of the WSA is vegetated with pinyon pine, juniper, mid grasses, blackbrush, and desert shrub. The anticipated long-term disturbance of 5,550 acres would denude about 50 percent of the WSA's sparse vegetation if surface disturbance occurred in the vegetated areas of the WSA. If this development occurred, rehabilitation of the area to its former vegetation composition might be impossible, possibly causing portions of existing and PNV types to be permanently modified through scarring of the landscape.

No special status plant species are known to occur in the WSA, therefore, no impacts are projected. However, BLM would require the appropriate clearances



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prior to authorizing surface-disturbing activities. Consultation with FWS would occur if necessary.

Conclusion: Over the long term, composition of vegetation types would be altered or destroyed on 22 percent (5,500 acres) of the WSA (50 percent of the vegetated area). No impacts to special status plant species are projected because none are known to occur in the WSA.

- Impacts on Water Resources

In the long term, extensive tar sand development would disrupt the recharge of the area's springs, increase erosion and sedimentation in the drainages of the area, and degrade groundwater quality through injection of low quality surface water and release of pollutants through the extraction process.

Sedimentation in drainages would not significantly affect surface water quality because of required reclamation and mitigation and because precipitation is low and all streams are ephemeral.

Water injected into the tar sand as part of the in-situ extraction process would be high in salts and the extraction process would release hydrocarbons to the groundwater. The extent of groundwater pollution that would occur is unknown but would likely be extensive.

Diversion of up to 6,900 acre-feet of water per year from the Dirty Devil River would reduce the average annual flow of the river by approximately 12 percent. Use of groundwater would affect spring flows and ultimately reduce flows in the river, but by a smaller amount. Because the Dirty Devil River is high in salinity (1,500 to 2,000 milligrams per liter), reduction in flows would actually remove several thousand tons of salt from the Colorado River system (USDI, NPS and BLM, 1984). However, reductions in flow would reduce opportunities for canoeing or recreation on the river.

Commitment of water for use in tar sand oil extraction over long periods of time would conflict with upstream development for other consumptive uses of water such as coal mining, powerplant cooling, and agriculture. Any reductions in the flow of springs in the vicinity of the Tar Sand Triangle could reduce the availability of water for livestock and wildlife. The degree of reduction in spring flows is unknown.

Conclusion: Water quality, quantity, and uses would not be affected in the short term. Over the long term, tar sand development would reduce the quality of groundwater, reduce salinity in the Colorado River, reduce the flow of the Dirty Devil River, and compete with other potential consumptive water uses in the Dirty Devil River system.

- Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to mineral exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

In the long term, disturbance of 5,550 acres and continuous tar sand production activities would disrupt wildlife, including the endangered peregrine falcon and the other special status wildlife species. Mobile species would leave the disturbed areas for the duration of activities. Some individual animals would perish and populations would be reduced. Substantial value yearlong desert bighorn sheep range in the WSA would not be disturbed because it is comprised of the canyons below the potential tar sand production area.

Reduction of spring flows as a result of the pumping of groundwater for extraction of oil from tar sand would be detrimental to wildlife and could make certain habitats unusable. The extent of the potential effect on water flows and the resultant reductions in wildlife populations is unknown, but would be slight within the WSA because water availability is already low.

Special status species would be protected under provisions of the Endangered Species Act. Even though individual animals would be destroyed by tar sand development, the viability of the species would not be affected.

If effective, reclamation of 5,550 acres in the WSA could improve habitat for some species at the conclusion of tar sand activities.



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Conclusion: Over the long term, tar sand development would reduce available habitat for other special status and most other species. Populations of some species would be reduced in the WSA. Reclamation efforts would improve habitat for some species.

- Impacts on Livestock Management

With this alternative, domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The grazing system proposed for the Robbers Roost Allotment would continue to be considered and could be implemented. Few, if any, changes in livestock management techniques are expected.

The estimated 439 AUMs currently allocated in the WSA, 8 percent of the Robbers Roost Allotment, are controlled by one livestock permittee. The 218 AUMs (16 percent of the Flint Trail Allotment) are located in an unallocated area. Surface disturbance of 5,550 acres from mineral and energy exploration and development could reduce available forage for cattle for a minimum of 5 years (USDI, NPS and BLM, 1984). All 5,550 acres of disturbance would be within the Robbers Roost Allotment. Assuming disturbance would be in vegetated areas, tar sand development would disturb or destroy about 50 percent of the vegetation. This would amount to a potential loss of about 220 AUMs or 4 percent of the forage in the allotment. Following reclamation of disturbed areas, additional forage could be available for livestock.

Conclusion: In the long term, available livestock forage in one allotment would be reduced by 4 percent for the duration of the tar sand activities.

- Impacts on Visual Resources

In the short term, 9 acres would be disturbed because of mineral exploration and development and construction of access to in-held State lands.

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 9 acres of surface disturbance from mineral and energy exploration and development would be degraded and VRM Class II management objectives would probably not be met until reclamation was completed. After rehabilitation, visual resources would be restored to meet VRM Class II objectives.

Loss of visual quality associated with vegetation removal for tar sand development would be unavoidable and would persist for 70 years or longer (USDI, NPS and BLM, 1984). Over the long term, direct loss of visual quality would occur on 5,550 acres. In addition, visual quality would be indirectly reduced throughout the WSA.

Conclusion: VRM objectives would not be met on directly disturbed areas. Visual resources would be degraded throughout the WSA.

- Impacts on Cultural Resources

The entire WSA would remain open to mineral location and leasing, thus, over the long term, tar sand development would occur in locations which contain significant cultural resources. All sites in the WSA would continue to receive protection under existing Federal and State antiquities laws. Any surface disturbance would be preceded by standard inventory and mitigation procedures; however, increased activity in these areas may provide opportunities for illegal artifact collection. In addition, buried sites may be inadvertently damaged due to surface development.

With this alternative all 25,000 acres of the WSA would remain open to ORV use and 8 miles of way would remain open to vehicular access. ORV activity does not currently constitute a significant use of the WSA and probably would not become important in the future due to topographic constraints, the remoteness of the area, and the availability of other more popular driving areas in the region. Although it is unlikely to occur, some cultural resources may receive unintentional damage as a result of ORV activity. Sites located in sandy deposits or on thin soils overlying bedrock are vulnerable to any type of surface vehicular traffic. In addition, general vehicular access to the unit may increase artifact collection and vandalism opportunities (Nickens, et al., 1981).

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

Conclusion: Damage to archaeological sites may occur due to surface development and/or continued ORV use. Intentional vandalism and artifact collection may increase.



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## • Impacts on Recreation

The future trends in recreational use of the WSA are unknown. However, upon review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Jungst, 1978; Hof and Kaiser, 1981 and Cordell and Hendee, 1982), it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the foreseeable future. Therefore, recreational use could increase from the present 20 visitor days per year to between 30 and 72 visitor days per year by the year 2020.

About 8 miles of existing roads and new mineral exploration roads would remain open for vehicular use. With increases in use of vehicles, the quality of the primitive recreation experience in the WSA would be reduced. However, present vehicular-based recreation visitation is small and large increases are not expected because of other recreation attractions and alternate use areas in the vicinity of the WSA.

In the long term, 5,550 acres of disturbance for tar sand development and new access would eliminate opportunities for primitive recreation in 13,080 acres above the canyon rims of the WSA. Tar sand development in the Tar Sand Triangle STSA within or near the French Spring-Happy Canyon WSA would also degrade primitive recreational values in the adjoining Dirty Devil, Horseshoe Canyon (South), and Fiddler Butte WSAs and the proposed wilderness in the Glen Canyon NRA and Canyonlands National Park, where there would be increases in sounds, airborne emissions, and possible reductions in visual range (USDI, NPS and BLM, 1984).

**Conclusion:** Both primitive and ORV-type use would increase. Opportunities for vehicular-based recreation would be maintained. Over the long term, opportunities for primitive recreation would be eliminated from the portion of the WSA above the canyon rims and would be degraded throughout the WSA.

## • Impacts on Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. In the long term, tar sand development in the WSA would lead to significant increases in population, employment, and income for Wayne, Garfield, and possibly Emery Counties. The employment of 350 persons would be an 8-percent increase

in the projected Garfield and Wayne County total employment in 2010. It would create extensive changes in socioeconomic conditions affecting all economic sectors and the infrastructures of Hanksville and Green River, Utah. Both beneficial and adverse impacts would occur. Beneficial impacts would include increased personal income and local tax base while adverse impacts would result from increased demands on infrastructures such as schools and utilities. For more information on the nature of socioeconomic impacts of tar sand development in the general vicinity of the WSA, the reader is referred to the Tar Sand Triangle Draft EIS (USDI, NPS and BLM, 1984) and the Utah Combined Hydrocarbon Leasing Regional Final EIS (USDI, BLM, 1984c).

In the long term, tar sand development would reduce livestock forage and related sales and ranchers' return to labor and investments because the existing potential grazing use (439 allocated AUMs) would be reduced by about 50 percent. However, this is only 4 percent of the forage in the Robbers Roost Allotment.

Recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the foreseeable future. Because recreational use in the area is estimated to increase only 30 to 72 visitor days per year and recreation-related local expenditures average only \$4.10 per visitor day, recreation-related expenditures attributable to the WSA would likely not be significant to the local economy. In the long term, with tar sand development, primitive recreation in the WSA and related local income could be eliminated. Because existing visitation is only about 20 visitor days per year, this loss would not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. In addition to the 8,380 acres presently leased for oil and gas (\$16,760 lease fees) there are 16,620 acres in the WSA open to oil and gas leases that are currently not leased. If leased, they would bring up to \$33,240 additional Federal lease fee revenues per year, in addition to new royalties from lease production if oil and gas were discovered. Tar sand production would bring a royalty of 12.5 percent for products removed from the lease area. Assuming a 30,000-BPD operation, royalties would be substantial. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$676 per year) would continue unless tar sand development disturbed sufficient acreage to require reductions in livestock forage use.



# FRENCH SPRING-HAPPY CANYON WSA

Conclusion: Economic conditions would not be affected in the short term. In the long term, there would be major beneficial as well as adverse effects on all economic sectors and infrastructures in Wayne, Garfield, and possibly Emery Counties.

## All Wilderness Alternative (25,000 Acres)

### • Impacts on Wilderness Values

Designation and management of all 25,000 acres as wilderness would contribute to the preservation of the wilderness values in the French Spring/Happy Canyon WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 25,000 acres. Solitude and primitive recreation would be protected on approximately 11,000 acres that meet and 14,000 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, endangered and sensitive species, wildlife associated with wilderness, and archaeological sites, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of valid existing rights. In the foreseeable future, disturbance of up to 5 acres is anticipated. Two would be from exploration of valid mining claims in the northwestern and southern portions of the WSA and from providing access to a State section (T. 30 S., R. 15 E., sec. 2). Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA. As much as 4 percent (1,000 acres) of the WSA could be so affected (the areas that would be affected are generally not considered to have outstanding opportunities for solitude or primitive recreation). Special features, including Class A scenery, special status species, wildlife associated with wilderness, and archaeological sites, would not be affected because the disturbance would be minor involving only 0.02 percent (5 acres) of the WSA and would not be located where the special features are located. In addition, appropriate measures would be taken to protect special status species and cultural values prior to any surface-disturbing activity, and it can be assumed that no significant negative impact would

occur to these features. Refer to the Cultural Resources and Wildlife Including Special Status Species sections for more information. Mitigation to protect wilderness values would be applied, but loss of wilderness values would occur if development involving valid existing rights could not be otherwise achieved. All in all, the disturbance would probably not be substantially noticeable in the area as a whole.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. Tar sand development would not occur.

The gradual increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values.

Tar sand development in the Tar Sand Triangle STSA outside but adjacent to the WSA would degrade wilderness values in the WSA through sounds, airborne emissions, and reductions in visual range. The magnitude of the potential loss is unknown.

Conclusion: Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 5 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 1,000 acres. Special features would be preserved.

### • Impacts on Air Quality

In the long term, air quality would benefit from the reduction of possible disturbance in the WSA. It is unlikely that fugitive dust from exploration and development of uranium and copper within the WSA would reduce visibility in the WSA as a whole or in adjacent WSAs or NPS-managed areas. However, if tar sand development occurred in the portion of the Tar Sand Triangle STSA outside the WSA, reduction in visibility in the WSA and in adjacent NPS areas could still occur, although this impact would be reduced. Tar sand development may not be feasible if the entire Tar Sand Triangle STSA is not open for development. In this event, air quality would not be affected in the long term.



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Conclusion: Air quality would not be affected by activities inside the WSA.

- Impacts on Geology and Topography

Effects on the geologic structure and topography of the WSA that would result from 5 acres of surface disturbance in the short term would not be significant because only a small portion (0.02 percent) of the area would be disturbed.

Conclusion: Geologic and topographic features would not be significantly affected.

- Impacts on Soil

The soil resource could benefit from the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities. It is estimated that 5 acres could be disturbed from uranium exploration and access road construction in the short term. Assuming that all disturbance would occur in areas with a critical erosion class and that erosion condition would increase one class, soil loss on the 5 acres would increase from an estimated 14 cubic-yards per year to 28 cubic-yards per year. However, soil loss would decrease as reclamation occurred. The time required for complete reclamation cannot be determined. Therefore, under this alternative, annual soil loss from surface disturbance in the WSA would increase by only an estimated 14 cubic-yards per year (0.03-percent increase over present soil loss). This would be an insignificant increase in erosion.

Conclusion: Increase in soil erosion (0.03 percent) would be insignificant.

- Impacts on Vegetation Including Special Status Species

With this alternative, vegetation would be protected in a natural condition insofar as surface-disturbing activities would be minimized. With only 5 acres of disturbance, the composition of vegetation types in the WSA would not be significantly altered. Less than 0.25 percent of any vegetation would be disturbed. No special status plant species would be affected.

Conclusion: Vegetation types would not be significantly altered. No special status species would be affected.

- Impacts on Water Resources

The only surface water resource is a spring that could be expected to benefit from this alternative because of the reduced likelihood of surface disturbance from tar sand activities disrupting the recharge area. Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in TDS is expected to occur because of an estimated annual soil loss of 28 cubic-yards from surface disturbance on up to 5 acres.

Uranium exploration in the WSA would generally be confined at or near the surface or with widely spaced drilling and would not significantly affect the quantity or quality of groundwater in the WSA. The water requirement for a tar sand industry in the adjacent part of the Tar Sand Triangle STSA outside the WSA would be about 11,000 acre-feet per year for 100 or more years. Development of groundwater within the WSA to help meet water requirements for production on adjacent areas would be foregone. Water from adjacent areas would be available for other uses after the tar sand production period.

Because of the general lack of surface water in the WSA, river flows and water uses would not be affected.

Conclusion: In the short term, ground and surface water quality and quantity would not be affected. In the long term, groundwater quality in the WSA could be reduced by tar sand development outside the WSA.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

Approximately 8,380 acres (6,360 acres pre-FLPMA and 2,020 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

If designated, the area would be placed in a Category 4 status with no new leasing. However, pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. If oil and gas leases are converted to combined hydrocarbon leases, they would be considered as post-FLPMA. If production has not occurred prior to designation, the existing leases would expire and would not be reissued.



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However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of recoverable conventional oil and gas resources.

Approximately 20,480 acres of the WSA are part of the Tar Sand Triangle STSA and 6,360 acres of existing oil and gas leases are under application for conversion to combined hydrocarbon leases. If converted, the combined hydrocarbon leases would be post-FLPMA and subject to wilderness protection stipulations. Because stipulations would be restrictive, no development is anticipated following wilderness designation. Therefore, it is concluded that, due to wilderness protection requirements and closure to future leasing, tar sand development within the WSA would not occur. The potential for recovery of 503 million barrels would be foregone. This is equivalent to 27 percent of the projected U.S. daily petroleum product demand of 18.39 million barrels by the year 2010 (SAI, 1982).

- Locatable Minerals

There are approximately 24 mining claims (primarily for uranium) that cover about 480 acres of the WSA. Claims can be located up to the time of designation. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. Less than 500 metric tons of uranium oxide could occur in the WSA. Exploration for uranium is likely in the foreseeable future even if the area is designated as wilderness. However, if locatable minerals, including uranium, are not within claims filed prior to designation, the potential for recovery would be foregone. Therefore, with wilderness designation, the potential to recover an unknown amount of uranium would be foregone over the long term.

- Salable Minerals

Salable mineral development would not be allowed. Because of the remoteness of the area and difficulty in access, salable minerals would not be developed in any case. Therefore, the loss of salable mineral production potential would not be significant.

Conclusion: The long-term potential for production of 503 million barrels of oil from tar sand and an unknown amount of uranium oxide would be foregone.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife would benefit from this alternative due to the preservation of solitude and naturalness. The desert bighorn sheep reintroduction program would continue. Desert bighorn sheep may migrate into the wilderness but their numbers would remain low due to the limited availability of water.

About 5 acres of surface disturbance could occur from uranium exploration and access roads. This would disrupt some wildlife populations and result in mobile species (such as deer) leaving the disturbed areas for the duration of activities. Less mobile species (such as the side-blotched lizard) would either perish or coexist with the disturbances at smaller and less viable population levels. The yearlong desert bighorn sheep habitat within the WSA would not be disturbed. Therefore, this disturbance would not adversely affect the distribution and abundance of bighorn sheep. The peregrine falcon and black-footed ferret (that may occasionally inhabit the area) and BLM sensitive species (such as Bell's vireo and golden eagle) would avoid the disturbed area. However, overall, these species would not be adversely affected because less than 0.02 percent of the WSA would be disturbed.

Conclusion: Wildlife habitats and populations would be protected and would benefit from solitude.

- Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The estimated 439 AUMs currently allocated in the WSA are controlled by one livestock permittee in the Robbers Roost Allotment. Wilderness designation would result in closure of about 8 miles of way in the WSA that are used for access for livestock management and access to the corral. Overall, increased costs of management of the estimated 439 AUMs in the Robbers Roost Allotment would result if use of the ways by the permittee was restricted. The grazing system presently proposed does not include any additional surface disturbance and could be implemented without impairment or loss of wilderness values. Designation of the WSA as wilderness would prevent any short-term loss of forage due to tar sand



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development. Restrictions on predator control would not affect livestock management in this WSA where predator control has not been conducted for several years.

Conclusion: Restrictions on access would be an inconvenience to the permittee and would result in slight increases in the cost of management.

## • Impacts on Visual Resources

Wilderness designation would ensure the preservation of the area's visual resources. With this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management of the area under VRM Class I requirements (which generally allows for only natural ecological change) and closure of the entire area to ORV use and future mineral leasing and location.

Phasing out oil and gas and combined hydrocarbon leases would reduce possible mineral-related surface disturbance to only that associated with development of valid mining claims. Mitigative measures would be applied to minimize visual contrast created by uranium exploration and access roads. However, some permanent localized degradation could be expected. Because only 5 acres would be disturbed, visual quality would not be reduced in the WSA as a whole.

Conclusion: Visual resources would be preserved.

## • Impacts on Cultural Resources

With this alternative all 25,000 acres would be withdrawn from mineral location and closed to leasing and sale. Except for an estimated 5 acres of disturbance resulting from road construction to an in-held State section and exploration of mining claims, the WSA and all cultural resources in it would be protected from surface disturbance. In addition, archaeological sites would be protected from the secondary impacts resulting from increased access and activity in the area.

All 25,000 acres would be closed to ORV use, thus, eliminating any possibility of inadvertent damage to cultural resources. Approximately 8 miles of way would be closed to all vehicular traffic. The complete elimination of vehicular access to the WSA would indirectly help protect archaeological sites from intentional vandalism and artifact collection (Nickens, et al., 1981).

As recreation use of the unit increases due to wilderness designation, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. However, no such sites have yet been identified in the WSA. The protection of cultural resources from ORV activity and surface development would probably outweigh any increases in vandalism due to wilderness designation and increased recreational use.

Cultural resource management actions would be subject to restriction by the protection of other wilderness values.

Conclusion: Closure to all vehicular access and surface disturbance would protect sites from unintentional damage and generally decrease accessibility in the unit. Cultural resource management procedures would be subject to restrictions in order to protect other wilderness values.

## • Impacts on Recreation

This alternative could benefit primitive recreation by reducing the likelihood of surface-disturbing activities within the WSA, thereby protecting primitive recreation values and increasing management recognition of these values. Vehicle-based recreation would be eliminated from the WSA and 8 miles of ways would be closed. Because vehicle use is low (5 visitor days per year) and there are other more suitable ORV use areas in the vicinity of the WSA, ORV use would not experience an overall decline in the region.

In the long term, tar sand development in the Tar Sand Triangle STSA outside but adjacent to the French Spring-Happy Canyon WSA would degrade primitive recreational values through sounds, airborne emissions, and reductions in visual range. The overall effect on visitation is unknown.

As discussed for the No Action/No Wilderness Alternative, recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the foreseeable future in relation to population increases and current trends of recreational use. Existing primitive recreational use is estimated at only 15 visitor days annually. Management provided through a Wilderness Management Plan would control destructive increases



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in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. As recreation use increases, commercial operations based on primitive recreational activities could apply for use of the WSA.

Conclusion: The All Wilderness Alternative would preserve opportunities for primitive recreation. Although vehicle-based recreation would not be allowed in the WSA, it would not decline on a regional basis.

### • Impacts on Economic Conditions

Overall there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local sales and Federal revenues currently provided by resource uses in the WSA (refer to Table 12), as well as loss of potential increases in population, sales, and Federal revenues that could occur with the No Action/No Wilderness Alternative as a result of tar sand development.

The major economic benefits and drawbacks of tar sand production from the WSA (i.e., increased personal income and demands placed on community infrastructure) would not occur. However, tar sand production from the portion of the Tar Sand Triangle STSA outside the WSA could occur and could result in major socioeconomic impacts in Garfield, Wayne, and possibly Emery Counties (USDI, NPS and BLM, 1984). Because about 14 percent of the Tar Sand Triangle STSA is within the WSA, the duration and size of potential tar sand projects in the region would be significantly reduced to the point that some projects could become infeasible.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development allowed under the No Action/No Wilderness Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$8,780 of livestock sales and \$2,195 of ranchers' return to labor and investment. Recreation-related local expenditures would be small (average of \$4.10 per visitor day) and would be insignificant to both the local economy and individual businesses.

The loss of 8,380 acres now leased would cause an eventual loss of up to \$16,760 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$32,240 annually in Federal revenues from the 16,620 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

Federal grazing fees would continue as at present with a possible collection of \$676 per year.

Recreation-related Federal revenues may eventually increase if the demand for commercial outfitter services increases. Presently, no commercial outfitters use the WSA.

Conclusion: Economic conditions would not be significantly changed in the short term. In the long term, major beneficial or adverse impacts of tar sand development on the economic sectors and infrastructures of Wayne, Garfield, and possibly Emery Counties would not occur.

### **Partial Wilderness Alternative (Proposed Action) (11,110 Acres)**

The tar sand resource is located in the area that would not be designated wilderness. Because the same tar sand activities projected for the No Action/No Wilderness Alternative would also occur with this alternative, most resources would be affected as analyzed for that alternative.

### • Impacts on Wilderness Values

Wilderness designation of 11,110 acres would contribute to preservation of the area's wilderness values. Although anticipated disturbance would be the same as identified for the No Action/No Wilderness Alternative, this Partial Wilderness Alternative would reduce the potential for surface-disturbing activities that would impair wilderness values over the long term in the designated area, and wilderness values would be preserved overall in the designated area. Protection in the designated area would include



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management under VRM Class I which generally allows for only natural ecological change, ORV closure (none of the existing ways would be closed) and closure to future mineral leasing and location. Naturalness, outstanding opportunities for solitude and primitive recreation (all designated acres meet the standards of outstanding), and most Class A scenery would be preserved. Other special features would benefit from the added protection in the designated area (refer to Cultural Resource and Wildlife Including Special Status Species sections).

No direct loss of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance would occur within the designated portion.

Disturbance of approximately 9 acres from uranium exploration in the nondesignated portion of the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Three of these acres of disturbance would be for access to a State section (T. 30 S., R. 15 E., sec 2). Special features, including Class A scenery, special status species, wildlife associated with wilderness, and cultural values, would not be significantly affected during the short term because the disturbance would be minor involving only 0.04 percent of the WSA and the disturbance would generally not be located where the special features are located. Appropriate measures would be taken to protect special status species and archaeological values prior to any surface-disturbing activity, and negative impacts to these values would not be significant during the short term. Refer to the Cultural Resources and Wildlife Including Special Status Species sections for more information.

Disturbance over the long term would involve uranium development in the nondesignated portions of the WSA. It would also involve tar sand development which would directly disturb approximately 5,550 acres on the mesa top. Naturalness and outstanding opportunities for solitude and primitive recreation would be directly lost in areas of disturbance. Most of the Class A scenery and the bighorn sheep habitat is in the canyon areas and would not be affected, but inadvertent losses would occur to cultural values and special status wildlife species habitat. Refer to Cultural Resources and Wildlife Including Special Status Species sections.

During the period of activity, the visual and audible disturbance and airborne emissions from mineral ex-

ploration and development would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas, but also indirectly on adjacent portions of the WSA. As much as 6 percent (1,500 acres) of the WSA could be so affected in the short term. Over the long term, the effects of tar sand development would indirectly reduce the quality of scenic values and opportunities for primitive recreation and solitude throughout the WSA.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation in the WSA, although vehicular use of all 8 miles of existing ways plus vehicular use of new mining roads in the nondesignated area would continue to detract from these opportunities during the period of activity.

The gradual increase in visitor use would be mostly primitive in nature and would not be expected to reduce wilderness values. The WSA is large enough to incorporate the additional use adequately and increased use would largely be managed so as to not result in the loss of wilderness values.

Tar sand development in the Tar Sand Triangle STSA in and near the French Spring-Happy Canyon WSA would degrade wilderness values in the adjoining Dirty Devil and Horseshoe Canyon (South) WSAs. Also affected would be the Fiddler Butte WSA and proposed wilderness in the Glen Canyon NRA and Canyonlands National Park where sounds and airborne emissions from the energy and mineral developments would degrade solitude, visibility, and primitive recreation values (USDI, NPS and BLM, 1984).

Conclusion: Wilderness values would be preserved in the designated area which includes approximately 44 percent (11,110 acres) of the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly lost on 9 acres in the nondesignated area in the short term and on 5,550 acres over the long term. Over the long term, the quality of opportunities for solitude and primitive recreation would be indirectly reduced throughout the WSA including the portion designated as wilderness.

### • Impacts on Air Quality

In the long term, disturbance, activities, and effects on air quality would be as described for the No Action/No Wilderness Alternative.



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Conclusion: Without new technology for extraction of oil from tar sand, long-term development would reduce air quality and with variances could exceed PSD Class I limitations in the Canyonlands National Park.

- Impacts on Geology and Topography

Long-term development of tar sand on 5,550 acres of the Tar Sand Triangle by in-situ methods could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in the WSA (USDI, NPS and BLM, 1984).

Conclusion: Geologic and topographic features would be altered in the long term in the nondesignated area.

- Impacts on Soils

Impacts on soils would be as described for the No Action/No Wilderness Alternative.

Conclusion: Increases in soil erosion would be significant on a localized basis. Discharges into the Dirty Devil River would not be significant.

- Impacts on Vegetation Including Special Status Species

With this alternative, vegetation would be protected on the 11,110 acres that would be designated wilderness. In the 13,890-acre area that would not be designated, projected impacts would be as described for the No Action/No Wilderness Alternative.

The anticipated long-term disturbance of 5,550 acres would denude about 50 percent of the WSA's sparse vegetation if surface disturbance occurred in the vegetated areas of the WSA. If this development occurred, rehabilitation of the area to its former condition might be impossible, possibly causing portions of existing and PNV types to be permanently modified through scarring of the landscape.

No special status plant species are known to occur in the WSA, therefore, no impacts are projected. However, BLM would require the appropriate clearances prior to authorizing surface-disturbing activities. Consultation with FWS would occur if necessary.

Conclusion: Over the long term, vegetation types would be altered or destroyed on 22 percent (5,550 acres) of the WSA (50 percent of the vegetated area). No impacts to special status plant species are

projected because none are known to occur in the WSA.

- Impacts on Water Resources

The only water resource is a spring located in the portion that would be designated wilderness that could benefit because of the reduced likelihood for surface disturbance as described in the All Wilderness Alternative. However, in the long term, extensive tar sand development in the area that would not be designated would affect water quality and quantity as described for the No Action/No Wilderness Alternative.

Conclusion: Over the long term, tar sand development would reduce the quality of groundwater and reduce salinity in the Colorado River and compete with other potential water uses in the Dirty Devil River system.

- Impacts on Mineral and Energy Exploration and Production

Because the majority of known and potential resources are in the area that would not be designated, this alternative would generally not affect mineral and energy exploration and production.

The nondesignated portion of the WSA would remain open to mineral exploration and development of mineral and energy resources without consideration of wilderness values.

Conclusion: Implementation of the Partial Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Wildlife Habitats and Populations Including Special Status Species

Wildlife could benefit from this alternative due to the preservation of solitude and naturalness on 11,110 acres that would be designated wilderness.

However, in the 13,890-acre nondesignated area above the canyon rims, impacts on wildlife habitat and populations would be essentially the same as described for the No Action/No Wilderness Alternative.

In the long term, disturbance of 5,550 acres and continuous tar sand production activities would disrupt wildlife, including the endangered peregrine falcon and the other special status wildlife species. Mobile species would leave the disturbed areas for the duration of activities. Some individual animals



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would perish and populations would be reduced. Substantial value yearlong desert bighorn sheep range in the WSA would not be disturbed because it is comprised of the canyons below the potential tar sand production area.

Reduction of spring flows as a result of the pumping of groundwater for extraction of oil from tar sand would be detrimental to wildlife and could make certain habitats unusable. The extent of the potential effect on water flows and the resultant reductions in wildlife populations is unknown, but would be slight within the WSA because water availability is already low.

Special status species would be protected under provisions of the Endangered Species Act. Even though individual animals would be lost by tar sand development, the viability of the species would not be affected.

If effective, reclamation of 5,500 acres in the WSA could improve wildlife habitat at the conclusion of tar sand activities.

Conclusion: Over the long term, tar sand development would reduce available habitat for special status species and most other species. Populations of some species would be reduced but reclamation efforts would improve habitat for others.

### • Impacts on Livestock Management

The area that would be designated wilderness includes only a portion of the Flint Trail Allotment, which is unallocated and not used at the present time due to terrain limitations and low carrying capacity (USDI, BLM, 1983b).

In the area that would not be designated, grazing use (439 AUMs) would continue as authorized in the current Henry Mountain MFP. Surface disturbance of approximately 5,550 acres due to mineral and energy exploration and development could reduce available forage for cattle. If development of this magnitude occurred, approximately 4 percent of livestock forage on the Robbers Roost Allotment would be disturbed and/or destroyed, thus reducing the available AUMs. However, following reclamation, additional forage could be available to livestock.

Access to the 8 miles of ways used in livestock management would not be affected.

Conclusion: In the long term, available livestock forage in one allotment would be reduced by 4 percent for the duration of tar sand activities. Access to the 8 miles of ways in the WSA would not be restricted and livestock management would not be affected.

### • Impacts on Visual Resources

The VRM class would be changed from Class II to Class I in the designated area.

In the 13,890-acre portion that would not be designated, 11,520 acres would continue to be managed under VRM Class IV standards and 2,370 acres as Class II; and in the short term, 9 acres of surface disturbance from uranium exploration and access roads to State lands would result in a small amount of localized degradation of visual values, but no significant impact to the WSA as a whole is expected. Anticipated surface disturbances (5,550 acres) from tar sand development in this portion would not meet Class II objectives on the disturbed areas. Even after rehabilitation, some permanent localized degradation would be expected. In VRM Class IV areas, disturbances would create long-term contrasts. VRM objectives would not be met on the disturbed areas.

Conclusion: Visual resources would be degraded throughout the WSA. VRM objectives would not be met on directly disturbed areas.

### • Impacts on Cultural Resources

No surface disturbance is expected in the area proposed for wilderness designation. Only two of the recorded sites would receive protection from wilderness designation under this alternative. Both sites are small lithic scatters located in canyon bottoms. No specific inventory information is available for the area that would be designated as wilderness, hence, site density estimates may not be applicable to this partial alternative. However, there is probably good potential for finding additional sites in the designated area.

The remaining 28 recorded sites would be protected by existing Federal and State antiquities laws. Approximately 9 acres of surface disturbance is expected in the nondesignated area in the short term. Any development would be preceded by standard inventory and mitigation procedures. In the long term, tar sand development could occur and would result in the same impacts as analyzed for the No Action/No Wilderness Alternative.



Conclusion: Only two recorded sites would receive protection as a result of wilderness designation under this alternative. The remaining 28 sites would be protected by existing laws.

- Impacts on Recreation

Recreation use would increase between 2 and 7 percent per year in the short term. Impacts on recreation values and opportunities for the 11,110-acre area that would be designated would be as described in the All Wilderness Alternative. Outstanding primitive recreational opportunities would be recognized, managed, and preserved.

In the area that would not be designated (13,890 acres), little change in the type of recreational use is expected. ORV use would continue on the 8 miles of vehicular ways in the nondesignated portion of the WSA. Mineral and energy and exploration activities on up to 9 acres in the short term and 5,550 acres in the long term would result in direct loss of recreational values. The noise and emissions would result in an indirect loss in the quality of the primitive recreation opportunity throughout the WSA.

Conclusion: Both primitive and ORV recreation use would continue to increase. Primitive recreation opportunities would be preserved overall on the 11,110 acres of the WSA below the canyon rims. Quality of the primitive recreation opportunity would be degraded throughout the WSA.

- Impacts on Economic Conditions

Affects would be similar to those of the No Action/No Wilderness Alternative. Overall, there would not be significant changes in current trends of population, employment, and local income distribution in the short term.

Because few restrictions would be placed on the use of resources under partial wilderness designation, there could be slight losses in local sales and Federal revenues currently provided by resource uses in the WSA (refer to Table 12), as well as loss of potential increases in population, sales, and Federal revenues that could occur with the No Action/No Wilderness Alternative.

The majority of the tar sand resource would be within the nondesignated portion of the WSA and would be available for development on the long term. Therefore, tar sand production from the Tar Sand Triangle

STSA area in the nondesignated portion, as well as the remainder of the Tar Sand Triangle STSA, would occur and would result in major beneficial and adverse socioeconomic impacts in Wayne, Garfield, and possibly Emery Counties.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development with the No Action/No Wilderness Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to the assessment of future mining claims on the 11,110-acre area would be lost.

Over the short term, livestock use and ranchers' income would continue as at present with potential for 439 AUMs of use, \$8,780 of livestock sales, and \$2,195 of ranchers' return to labor and investment. If tar sand is developed in the nondesignated portion of the WSA, about 4 percent of the livestock forage in the Robbers Roost Allotment (50 percent [220 AUMs] of the allocated forage in the WSA) and related sales and returns could be reduced for up to 5 years, but there is a potential for increased grazing and related sales and returns following reclamation of disturbed areas.

Future increases in recreational use (refer to the Recreation section) and related local expenditures would be small (average of \$4.10 per visitor day) and would be insignificant to both the local economy and individual businesses.

The loss of 3,620 acres now leased would cause an eventual loss of up to \$7,240 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$9,520 annually in Federal revenues from the 4,760 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

In the short term, Federal grazing fees of \$676 per year would continue. In the long term, tar sand development on the nondesignated portion could reduce livestock forage use and related Federal grazing fees from the WSA by 50 percent (\$338 annually). These losses could be restored over time.



## FRENCH SPRING-HAPPY CANYON WSA

Conclusion: Economic conditions would not be affected in the short term. In the long term, there would be major beneficial and adverse effects on all economic sectors and infrastructures of Wayne, Garfield, and possibly Emery Counties from tar sand development.

Fideler Butte  
WSA









# Fiddler Butte WSA









# FIDDLER BUTTE WSA

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# FIDDLER BUTTE WSA

(UT-050-241)

## INTRODUCTION

### General Description of the Area

The Fiddler Butte WSA consists of 73,100 acres of public land in northeastern Garfield County. It is about 25 miles southeast of Hanksville and immediately north of Hite and Glen Canyon NRA. The Fiddler Butte WSA is managed by the BLM Richfield District Henry Mountain Resource Area office. A portion of the WSA is adjacent to the NPS-proposed wilderness within the Glen Canyon NRA. The western portion of the WSA contains eight parallel slickrock canyons which are all drainages of the North Wash. These canyons are widest and deepest along North Wash/U-95 and become narrower as they approach 1,000-foot rock cliffs near the Dirty Devil River. The WSA includes the geographic features of Fiddler Butte, the Block (North and South), and South Hatch Canyon. The predominant vegetation in the WSA is blackbrush and other desert shrubs with scattered pinyon-juniper woodland.

There are six State sections (3,838.1 acres) within the WSA boundaries.

Because of low relative humidity, diurnal temperature ranges are large (usually 30 to 35 degrees Fahrenheit [F]). Average annual temperatures are about 55 degrees F along the Dirty Devil River. Average summer temperatures are about 82 degrees F. Precipitation is usually less than 10 inches annually.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. The boundary of the WSA in relation to State-owned lands was inaccurately portrayed in the Draft EIS. The following 5 sections are not inside the WSA and the maps in the Final EIS have been revised accordingly.

- T. 31 S., R. 14 E., sec. 36
- T. 31 S., R. 15 E., sec. 36
- T. 32 S., R. 14 E., sec. 36
- T. 32 S., R. 15 E., sec. 36
- T. 32.5 S., R. 15 E., sec 32

2. Sections 2 and 36 (T. 32 S., R. 14 E.) are State lands that were shown as public lands on the Draft EIS maps.

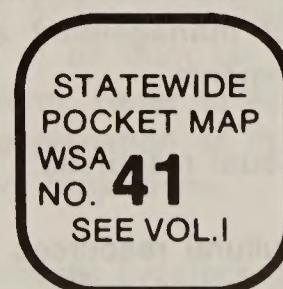
3. The locations of ways shown in the WSA on the Draft EIS maps were in error. Compare the Draft and Final EIS maps for changes.

4. The anticipated surface disturbance presented in the Draft EIS (16,660 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 16,660 acres reported in the Draft EIS to 62 acres for the short term and an additional 15,100 acres over the long term.

### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues of consistency with land use plans and policies and impacts on water rights that were discussed and eliminated from further consideration in the Introduction to Volume IV, impacts on forest resources were considered but not analyzed in detail in the Final EIS. The only forest resources in the WSA are about 5,925 acres of noncommercial pinyon pine and juniper trees. The resource is remote and inaccessible; and therefore, there is no projected demand for the resource. For these reasons, impacts on forest resources are not significant issues for analysis in the Final EIS.





# FIDDLER BUTTE WSA

## • Issues Analyzed in Detail

Over the short term, BLM projects only 62 acres of surface disturbance related to uranium exploration, access to in-held State lands, and rangeland developments. This level of activity (disturbance of about 0.10 percent of the WSA) would not significantly affect surface resources. However, there is the potential for development of a known tar sand resource in the long term. Tar sand development would create extensive surface disturbance in the eastern portions of the WSA that would significantly affect most surface resources and values. Significant issues for the Fiddler Butte WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on air quality including potential for exceeding PSD Class I standards at Canyonlands National Park.
3. Impacts on geology including fracturing, subsidence, and rockfalls due to in-situ extraction of tar sand bitumen.
4. Impacts on soils including increased erosion rates and salinity production.
5. Impacts on vegetation including special status species.
6. Impacts on water uses for the Dirty Devil River and on water quality, including salinity in the Colorado River system.
7. Impacts on mineral exploration and production, including uranium exploration and extraction of bitumen from tar sand.
8. Impacts on wildlife habitat and populations including special status species.
9. Impacts on livestock management particularly vehicular access for management and construction of rangeland developments.
10. Impacts on visual resources.
11. Impacts on cultural resources.
12. Impacts on recreational use of the WSA, including trade-offs between primitive and vehicular based recreation and impacts on the overall recreational use of the area.

13. Impacts on local economic conditions, including affects on current and future employment levels.

Comments made during the public comment period for the Draft EIS were voluminous and centered around the feasibility of tar sand development in the Tar Sand Triangle and the use of known tar sand resources as the rationale for the BLM Proposed Action.

Other issues addressed in the public comments include:

1. The adequacy of the BLM Wilderness Inventory.
2. The option of combining the Fiddler Butte, French Spring-Happy Canyon, Little Rockies, and Dirty Devil WSAs with NPS lands, and questions on the relationship of the WSA and NPS lands.
3. The advantages of the All Wilderness Alternative.
4. Support for the Utah Wilderness Coalition's proposal for an 85,000-acre Fiddler Butte wilderness.
5. An error in the Draft EIS maps that show a road in Rock Canyon.
6. The use of the Fiddler Butte WSA alternatives in the Statewide alternatives analyzed in Volume I.
7. Interim management problems in the WSA.
8. The need for a discussion of issues in the Final EIS.
9. The need for detailed maps.
10. The need for additional resource inventories.
11. Questions on BLM's estimates of hydrocarbon potential.
12. The feasibility of rangeland developments proposed for the WSA.
13. Questions on the estimation of grazing use in the WSA.
14. Statements on the effects of tar sand development on cultural resources.



15. Opinions on the economic benefits of wilderness designation.
16. Questions on BLM's assessment of wilderness values in the WSA.
17. Errors and inconsistencies in the identification of in-held State lands.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 41, for responses to specific comments about the Fiddler Butte WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

During scoping, it was suggested that two new partial alternatives be analyzed, one to exclude The Block due to the tar sand development potential and one to exclude Hatch Canyon due to the lack of solitude if adjacent tar sand development occurred. Two partial alternatives had been previously identified by BLM; one includes The Block and one excludes that area. In both cases, most of the North and South Hatch Canyons, except for a portion immediately east of the Dirty Devil River, are excluded. Since adding the suggested new alternatives would not substantially add to the information provided by the two partial alternatives already analyzed, the suggested alternatives were not analyzed in detail.

Alternatives of 85,000 and 87,000 acres that would add 13,700 to 15,700 acres of Federal and State lands to the northwest portion of the WSA were suggested in the public comments. These alternatives are not analyzed because the inclusion of approximately 7,600 acres of State lands would not be consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Four alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (73,100 acres); (3) Large Partial Wilderness (Proposed Action) (32,700 acres); and (4) Small Partial Wilderness (27,000 acres). A description of each alternative follows.

Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. Management actions presented in the Introduction to Volume IV are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 73,100-acre Fiddler Butte WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c). The six sections of State land (3,836.1 acres) within the area of the WSA (refer to Map 1 and Appendix 3 in Volume I) has not been identified in the MFP for special Federal acquisition through exchange or purchase. The figures and acreages given are for Federal lands only.

#### • Management Conditions and Constraints

All 73,100 acres would remain open to mineral location and leasing with standard and special lease stipulations and sale. Development work, extraction, and patenting would be allowed on 135 existing mining claims (2,700 acres) and future mining claims. Future and present leases, including 12 with potential for conversion to combined hydrocarbon leases on about 26,083 acres, could be developed under leasing Category 1 (standard stipulations) on about 70,283 acres and under Category 2 (standard and special stipulations) on about 2,817 acres.

Because of moderate certainty (c3) that uranium is within the WSA, it is projected that uranium exploration would occur in this area in the short term and that development could occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Because of known occurrence of large quantities of tar sand inside the WSA, in-situ production of oil from tar sand could occur over the long term. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

The present domestic livestock grazing use of the 73,100-acre WSA would continue as authorized in the MFP (estimated 1,057 AUMs), including



# FIDDLER BUTTE WSA

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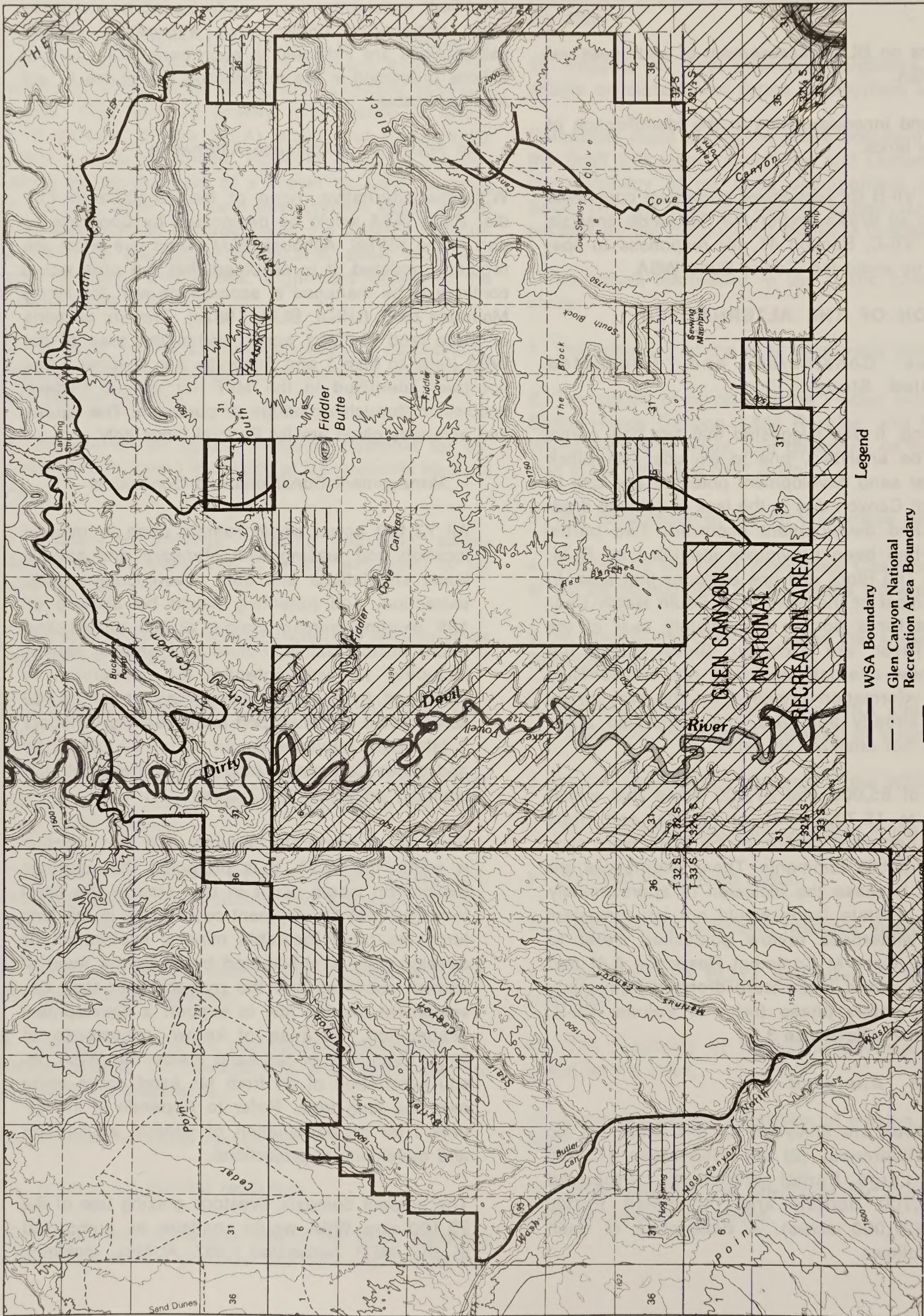
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R. 13 E.

T. 31 S.

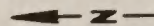
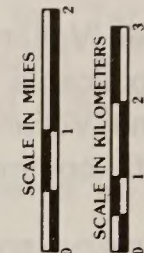
T. 32 S.

T. 33 S.



## Legend

- WSA Boundary
- - - Glen Canyon National Recreation Area Boundary
- ▨ State Land Within or Adjacent to WSA
- ▤ National Park Service Administered Land
- BLM Administered Land Within or Adjacent WSA



ELEVATION EXPRESSED IN METERS

## Map 1

### LAND STATUS

#### Fiddler Butte WSA

UT-050-241



## FIDDLER BUTTE WSA

the potential for new, but limited, livestock use of 13 AUMs in the currently unallotted (unused) Flint Trail Allotment. Existing range facilities (one spring development and 13 reservoirs) could be used and maintained and proposed new range improvements (renovation of one spring and eight reservoirs and development of one spring) could be implemented without wilderness considerations.

UDWR would continue desert bighorn sheep transplants in the vicinity of the WSA.

The entire WSA acreage, including 23.6 miles of way and 11 miles of cherry-stemmed roads, would be open to vehicular use.

The entire 73,100-acre area would be open to woodland product harvest (mostly firewood). There is little or no harvest of woodland products at the present time, nor is any projected because the resource is remote and inaccessible, and there are alternate sources outside the WSA.

The area would continue to be managed under VRM Class II on 30,550 acres and Class III on 42,550 acres as specified in the Henry Mountain MFP. (See Appendix 7 in Volume I for the definition of VRM terms.)

### • Action Scenario

It is projected that implementation of the No Action/No Wilderness Alternative would result in approximately 62 acres of surface disturbance in the short term.

Thirty-four acres of disturbance would result from uranium exploration. Exploration would take place in the eastern portions of the WSA with the exception of inaccessible areas. Exploratory drilling would occur along and adjacent to up to 10 miles of access roads in this area. Based on exploration activities typical of the area, approximately 28 employees and 70 days would be used in exploration activities. Exploration activities would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. Each location would be reclaimed following abandonment. Up to 5 years would be required to determine successful reclamation. Uranium could be developed in the WSA over the long term. The degree of development is unknown but would likely consist of shafts and mine dumps located along

the roads used for exploration. Additional disturbance would be minimal.

Approximately 18 acres of disturbance is assumed for construction of 9 miles of access roads to five State sections for purposes of possible mineral exploration (T. 31 S., R. 14 E., sec. 36; T. 31 S., R. 15 E., sec. 32; and T. 32 S., R. 15 E., secs. 2, 16, and 32).

An additional 10 acres of disturbance is projected for one spring development, one spring renovation, and renovation of eight livestock reservoirs.

There are an estimated 208.5 million barrels of recoverable oil in the tar sand and known to occur under the portion of the WSA that is within the Tar Sand Triangle STSA. Because of low oil prices, significant environmental impacts associated with development of tar sand, and because the Federal Government has not converted existing oil and gas leases in the STSA to combined hydrocarbon leases to allow for development of the resource, exploration or development of the tar sand is not projected for the short term. However, should the price of oil increase to a sufficient level and the environmental impacts of in-situ production of oil from tar sand be reduced to acceptable levels through reduced recovery rates over long periods of time, or through new technology such as microwave heating, steam injection, etc., development of this resource would be possible in the long term. In the absence of new technology, variances to environmental standards would be required to allow extraction of oil from the tar sand with current technology.

In order to offset costs associated with development, the entire Tar Sand Triangle deposit would have to be systematically developed throughout the STSA, including that portion located in the Glen Canyon NRA. Therefore, extraction of oil from tar sand inside the WSA would be only part of a much larger tar sand extraction operation in the STSA. The following projections are based on factors or ratios presented in the Utah Combined Hydrocarbon Leasing Regional Final EIS (USDI, BLM, 1984c) for in-situ production by current technology.

It is estimated that in-situ production of oil from the tar sand would disturb approximately 40 percent of the surface of the 37,760 acres of tar



## FIDDLER BUTTE WSA

sand area in the WSA. Therefore, approximately 15,100 acres of the WSA would be disturbed over the long term by drill pads, pipelines, and roads. Depending on production levels varying from 5,000 to 30,000 barrels per day, between 1,150 and 6,900 acre-feet of water would be withdrawn from the Dirty Devil River or groundwater sources each year for use in oil production. Up to 40 miles of access roads could be required. A work force of about 60 to 350 employees would be required for 20 to 100 years.

Recreational use is expected to increase over the current estimated use of 60 visitor days per year at a rate of 2 to 7 percent annually. Approximately 25 percent of this use would involve vehicular access, generally involving 23.6 miles of existing vehicular ways.

- All Wilderness Alternative

With the All Wilderness Alternative (refer to Map 2), all 73,100 acres of the Fiddler Butte WSA would be designated by an act of Congress as part of the NWPS. It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is projected that State lands would remain under existing ownership. There are six State sections (3,838.1 acres) within the WSA (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given with this alternative are for Federal lands only. No private or split-estate lands are located in the WSA.

- Management Conditions and Constraints

After wilderness designation, all 73,100 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 135 existing mining claims (2,700 acres) that may be determined to be valid. It is assumed that some of the 135 existing claims are valid and would be explored for uranium in the short term following wilderness designation. Twelve existing oil and gas leases (26,083 acres) would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown, or unless they are converted to combined hydrocarbon

(tar sand) leases under provisions of Public Law 97-78. All 26,083 acres of leases in the WSA are involved in lease conversion applications for tar sand development by in-situ methods (USDI, NPS and BLM, 1984). Leases converted to combined hydrocarbon (tar sand) leases in the WSA would contain nonimpairment stipulations, therefore, tar sand or oil and gas exploration or development would not occur with this alternative.

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 1,057 allotted AUMs in the WSA would remain available for livestock use. The use and maintenance of one spring development and 13 reservoirs would continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that the planned spring and reservoir renovation activities would be allowed in conformance with wilderness protection criteria (refer to Appendix 1 in Volume I).

Desert bighorn sheep reintroduction in the general vicinity of the WSA, primarily on NPS-administered land, would continue.

The entire 73,100-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560 provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 23.6 miles of existing vehicular ways or mineral access roads would be closed to vehicle use except as indicated above. About 8.5 miles of State Highway 95 that borders the west side of the WSA and 11 miles of dirt road near Rock Canyon and in Cove Canyon that would be cherry-stemmed would remain open to vehicular travel.

Harvest of woodland products would not be allowed except for the harvest of pinyon nuts or non-commercial gathering of dead-and-down wood if completed by other than mechanical means for use in the wilderness.

Visual resources on 73,100 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.



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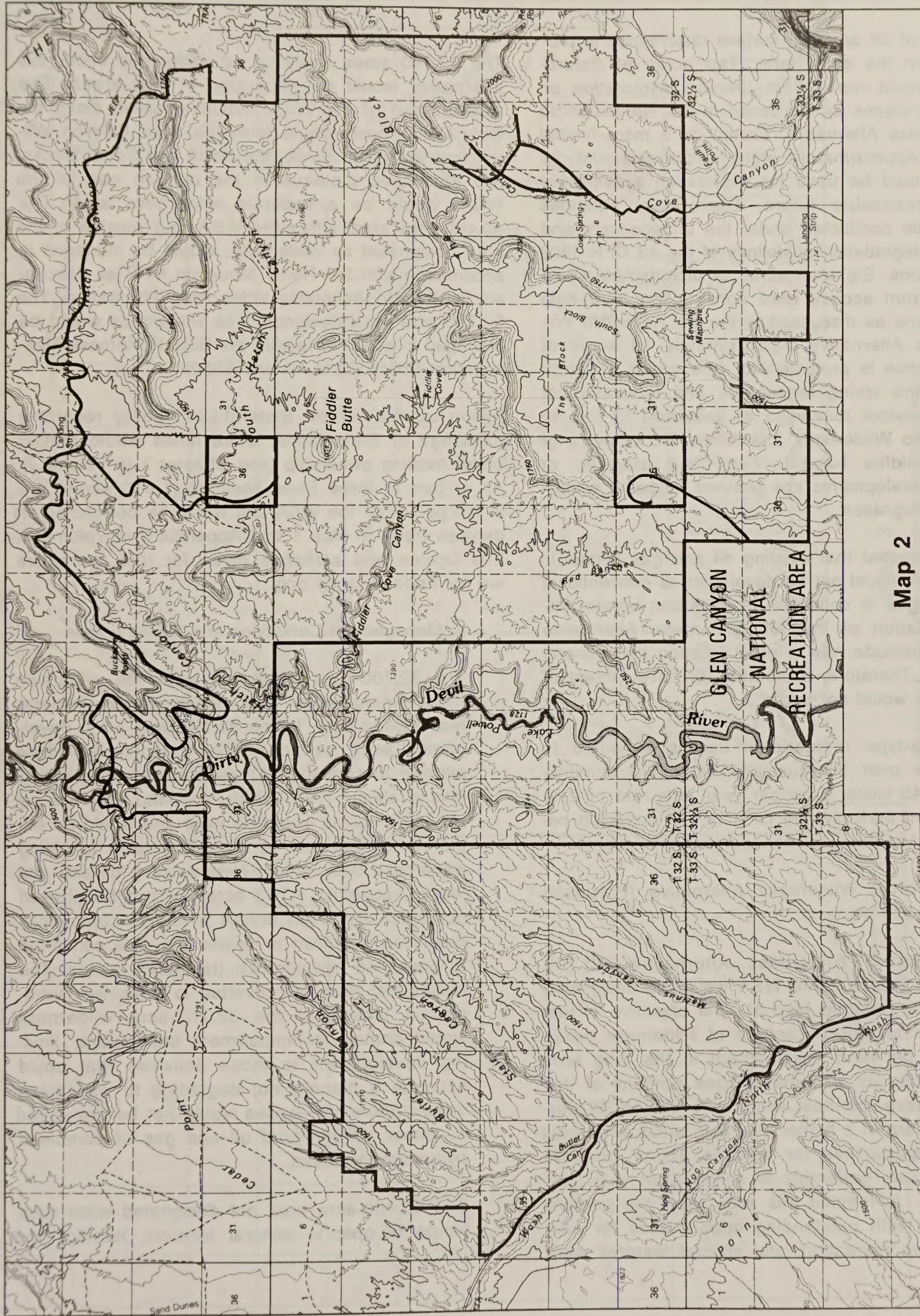
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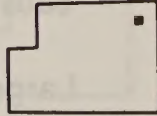
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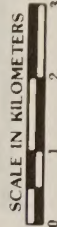
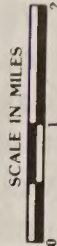
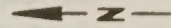


Legend

- All Wilderness Alternative (73,100 acres)
- - - Glen Canyon National Recreation Area Boundary



Map 2  
ALL WILDERNESS ALTERNATIVE  
Fiddler Butte WSA  
UT-050-241



ELEVATION EXPRESSED IN METERS



- Action Scenario

A total of 38 acres of surface disturbance is projected in the short term. Ten acres of disturbance would result from uranium exploration on existing claims as discussed in the No Action/No Wilderness Alternative, except on a more limited scale. Approximately eight employees and 20 days would be used for exploration activities in the foreseeable future. Exploratory activities would be conducted under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. Eighteen acres of disturbance would result from access road construction to in-held State land as discussed in the No Action/No Wilderness Alternative. Approximately 10 acres of disturbance is projected for one spring development, one spring renovation, and renovation of eight livestock reservoirs as described for the No Action/No Wilderness Alternative. No other range-land, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

It is projected that existing oil and gas leases in the WSA would not be developed as conventional oil and gas or combined hydrocarbon leases. Implementation of the All Wilderness Alternative would preclude new mineral location and mineral leasing. Therefore, exploration or development of minerals would not occur.

Primitive-type recreational use is expected to increase over the currently estimated primitive use of 45 visitor days per year at a rate of 2 to 7 percent annually. No ORV use is projected because of wilderness management restrictions.

- Large Partial Wilderness Alternative (Proposed Action) (32,700 Acres)

For this Partial Wilderness Alternative, 32,700 acres of the Fiddler Butte WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to reduce conflicts of wilderness designation with tar sand development in the long term while analyzing as wilderness those portions of this WSA that have the best wilderness values. Wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude, primitive recreation, and special features were

included where possible within a manageable boundary.

The 32,700 acres analyzed as wilderness under this alternative would be separated in two areas. The western part of the WSA, including areas along the Dirty Devil River, would form the Stair Canyon Wilderness while The Block (the North and South Blocks, two connected plateaus in the eastern part of the WSA) would be a separate wilderness area. The 40,400-acre area within the WSA, but outside of the area designated as wilderness, would be managed in accordance with the Henry Mountain MFP as described for the No Action/No Wilderness Alternative. The 32,700-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560).

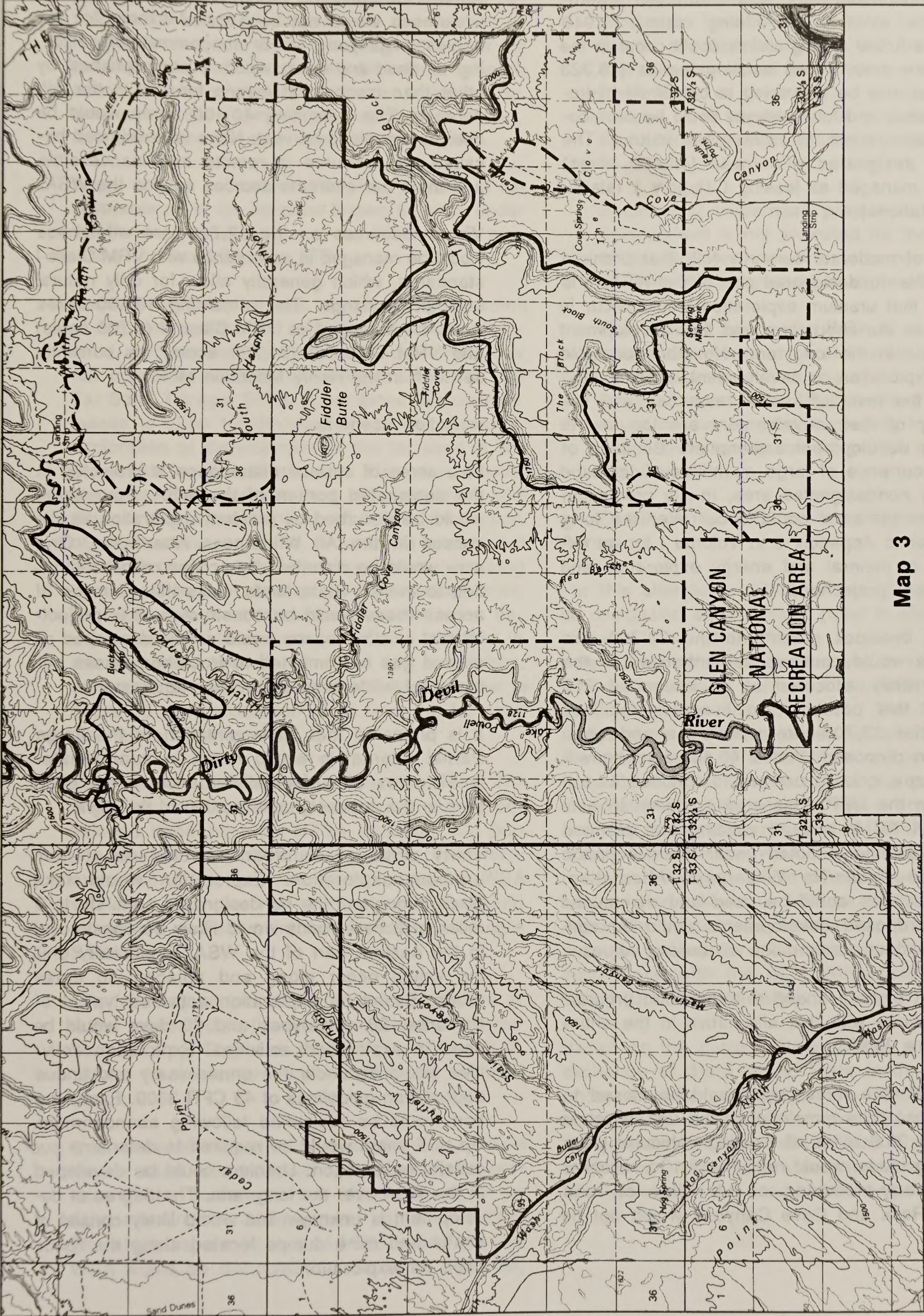
Based on the current State-of-Utah policy regarding exchange of State lands, State lands would remain under existing ownership (see Chapter 1 in Volume I). All or part of three State sections (1,610 acres) are in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 32,700-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 32,700-acre area, development work, extraction, and patenting would be allowed to continue on approximately 38 existing mining claims (760 acres), provided they are valid. Some claims would be valid and would be explored for uranium in the short term following wilderness designation. Nine existing oil and gas leases, covering 7,760 acres, would be phased out upon expiration unless a find in commercial quantities is shown or unless they are converted to combined hydrocarbon (tar sand) leases. The leases that may be converted to combined hydrocarbon leases in the 32,700-acre wilderness would contain nonimpairment stipulations, limiting development to those activities that could occur in a manner not degrading to wilderness values; therefore, leases would not be developed as either conventional oil and gas or combined hydrocarbon leases.

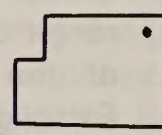
The 40,400-acre area not designated wilderness would be open to mineral location, leasing, and



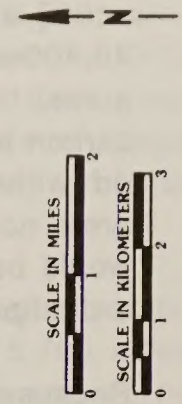


Legend

- WSA Boundary
- Partial Wilderness Alternative (32,700 acres)
- - - Glen Canyon National Recreation Area Boundary



**Map 3**  
**PARTIAL WILDERNESS ALTERNATIVE**  
**Fiddler Butte WSA**  
**UT-050-241**





sale. Development work, extraction, and patenting of the existing 97 mining claims (1,940 acres) and future mining claims could occur in the 40,400-acre area. Three existing leases (18,323 acres) that may be converted to combined hydrocarbon leases and future leases could be developed without concern for wilderness values. The area not designated wilderness (40,400 acres) would be managed as leasing Category 1 (standard stipulations).

Because of moderate certainty (c3) that uranium is within the nondesignated part of the WSA, it is projected that uranium exploration would occur in this area in the short term and that development could occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption. Because of known occurrence of large quantities of tar sand inside the nondesignated area, in-situ production of oil from tar sand could occur over the long term. Refer to Appendix 6 in Volume I for an explanation of mineral and energy exploration and development projections.

Domestic livestock grazing in the 32,700-acre wilderness would continue as authorized in the MFP (currently allocated at an estimated 213 AUMs in this portion). No livestock facilities exist in the 32,700-acre wilderness and none have been proposed. In the 40,400-acre nonwilderness area, grazing use would continue as authorized in the MFP. This area contains an estimated 844 AUMs and all existing and planned range developments noted under the description of the No Action/No Wilderness Alternative. Existing facilities could be used and maintained and the proposed developments could be constructed without concern for wilderness values.

The desert bighorn sheep reintroduction program would continue with this alternative in the entire 73,100-acre WSA.

The 32,700-acre wilderness would be closed to vehicular use. The remainder of the unit, which includes the 23.6 miles of existing vehicular ways and mining roads, would remain open to vehicular travel. Cherry-stemming of 11 miles of road near the Rock and Cove Canyons would not be needed.

Harvest of woodland products in the 32,700-acre wilderness would not be allowed except for the harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means for use in the wilderness. The remaining 40,400 acres would be open to woodland harvest. None is anticipated because the resource is remote and inaccessible and there are alternate sources outside the WSA.

Visual resources on the 32,700-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 40,400 acres would be managed as VRM Class II (5,700 acres) and VRM Class III (34,700 acres), as currently set forth in the Henry Mountain MFP.

## • Action Scenario

Five acres of surface disturbance is projected in the designated portion of the WSA. Four acres would be disturbed by uranium exploration as discussed in the All Wilderness Alternative. One acre would be disturbed by access road construction to in-held State lands. Less than 2 miles of access roads would be constructed. It is projected that existing leases would not be developed as oil and gas or combined hydrocarbon leases because of wilderness protection requirements.

It is projected that implementation of the Large Partial Alternative would result in approximately 57 acres of surface disturbance in the short term in the nondesignated portion of the WSA.

Thirty acres of disturbance would result from uranium exploration. Exploration would take place throughout the nondesignated area. Up to 9 miles of access roads would likely be constructed in the eastern part of the WSA. Exploratory drilling would occur along and adjacent to these roads. Based on exploration activities typical of the area, 28 employees and 60 days would be used in exploration activities. Exploration activities would be under the unnecessary and undue degradation guidelines of 43 CFR 3809. Each location would be reclaimed following abandonment. Up to 5 years would be required to determine successful reclamation. Uranium could be developed in the WSA over the long term. The degree of development is unknown but would likely consist of shafts and mine dumps located along the roads used for exploration.



## FIDDLER BUTTE WSA

Approximately 17 acres of disturbance would result from 8 miles of access road construction to five State sections in the nondesignated area for purposes of possible mineral exploration. An additional 10 acres of disturbance is projected for one spring development, one spring renovation, and renovation of eight livestock reservoirs.

There are an estimated 177 million barrels of recoverable oil in the tar sand known to occur under the nondesignated portion of the WSA that is within the Tar Sand Triangle STSA.

Because of low oil prices, significant environmental impacts associated with development of tar sand, and because the Federal Government has not converted existing oil and gas leases in the Tar Sand Triangle STSA to combined hydrocarbon leases to allow for development of the resource, exploration or development of the tar sand is not projected for the short term. However, should the price of oil increase to a sufficient level, and the environmental impacts of in-situ production of oil from tar sand be reduced to acceptable levels through reduced recovery rates over long periods of time or through new technology such as microwave heating, steam injection, etc., development of this resource would be possible in the long term. In the absence of new technology, variances to environmental standards would be required to allow extraction of oil from the tar sand with current technology.

To be cost-effective, the entire Tar Sand Triangle deposit would have to be systematically developed throughout the STSA including that portion located in the Glen Canyon NRA. Therefore, extraction of oil from tar sand inside the WSA would be only part of a much larger tar sand extraction operation in the Tar Sand Triangle STSA.

The following projections are based on factors or ratios presented in the Utah Combined Hydrocarbon Leasing Regional Final EIS (USDI, BLM, 1984c) for in-situ production by current technology:

It is estimated that in-situ production of oil from the tar sand would disturb approximately 40 percent of the surface of the 32,060 acres of tar sand area in the nondesignated part of the WSA. Therefore, approximately 12,800 acres of the WSA would be disturbed by drill pads, pipelines,

and up to 30 miles of access roads. Depending on production levels varying from 5,000 to 30,000 barrels per day, between 1,150 and 6,900 acre-feet of water would be withdrawn from the Dirty Devil River or groundwater sources each year for use in oil production. A work force of about 60 to 350 employees would be required for 15 to 95 years.

Because of wilderness protection requirements, development is not projected for the 5,700 acres of tar sand resource known to occur under The Block in the designated part of the WSA.

Recreational use in the WSA is expected to increase over the current estimated use of 60 visitor days per year at a rate of 2 to 7 percent annually. Approximately 25 percent of the total use would be due to vehicular activity in the nondesignated area, mostly involving 23.6 miles of existing ways.

- Small Partial Wilderness Alternative (27,000 Acres)

For this alternative, 27,000 acres of the WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to avoid conflicts with potential tar sand development and to identify and analyze the remaining portion of the WSA that has the best wilderness characteristics. The 27,000 acres analyzed as wilderness under this alternative include the side canyons of North Wash and areas along the Dirty Devil River. It differs from the preceding Partial Wilderness Alternative in that it does not include any land in the eastern half of the WSA. The 46,100-acre area within the WSA but outside of that designated as wilderness would be managed in accordance with the Henry Mountain MFP as described for the No Action/No Wilderness Alternative. The 27,000-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560).

Based on the current State-of-Utah policy regarding exchange of State lands, State lands would remain under existing ownership. One State section (640 acres) is in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands only.



R. 15 E.

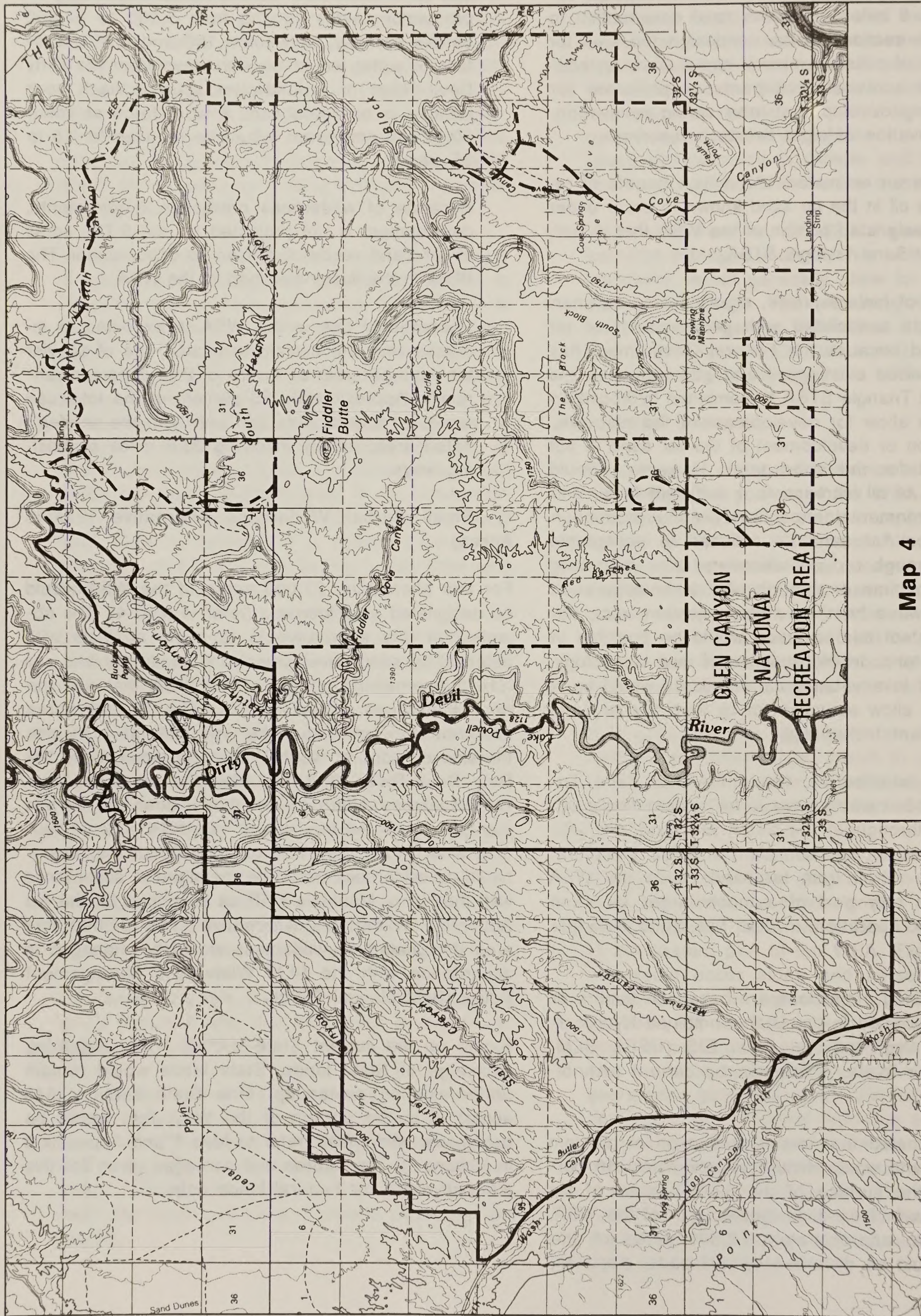
R. 14 E.

R. 13 E.

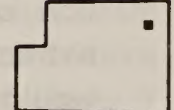
T. 31 S.

T. 32 S.

T. 33 S.



- Legend
- WSA Boundary
  - Partial Wilderness Alternative (27,000 acres)
  - Glen Canyon National Recreation Area Boundary

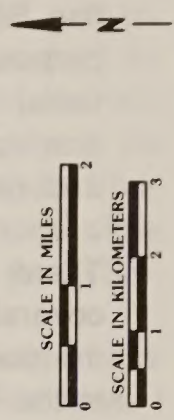


**Map 4**

**PARTIAL WILDERNESS ALTERNATIVE**

**Fiddler Butte WSA**

**UT-050-241**





- Management Conditions and Constraints

The 27,000-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. There are no mining claims in the 27,000-acre area. One existing oil and gas lease that includes 40 acres of the designated area would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. This lease is under conversion application for a combined hydrocarbon lease. Because of the lack of mining claims and wilderness protection criteria, mineral exploration or development is not projected following designation. The 46,100-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of 135 existing mining claims (2,700 acres) as well as future mining claims could occur in the 46,100-acre area. Development of existing leases (approximately 26,043 acres) that are under application for combined hydrocarbon lease and future leases could be developed without concern for wilderness values. The 46,100-acre area not designated would be managed as leasing Category 1 (standard stipulations).

Because of moderate certainty (c3) that uranium is within the nondesignated area, it is projected that uranium exploration would occur in this area in the short term and that development could occur in the long term. No other locatable mineral exploration or development is anticipated because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I). Because of known occurrence of large quantities of tar sand inside the nondesignated area, in-situ production of oil from tar sand could occur over the long term. Refer to Appendix 6 in Volume I for an explanation of mineral exploration and development projections.

Domestic livestock grazing in the 27,000-acre wilderness would continue as authorized in the MFP (currently estimated at 74 AUMs). No livestock facilities are located or are planned in the 27,000-acre wilderness. In the 46,100-acre nonwilderness area, grazing use would continue as authorized in the MFP (983 AUMs). New range facilities and improvements as described for the No Action/No Wilderness Alternative could be developed in this portion of the WSA without concern for wilderness values.

Continuation of the desert bighorn sheep reintroduction program would be allowable with this alternative in the entire 73,100-acre WSA.

The 27,000-acre wilderness would be closed to vehicular use. The remainder of the unit would remain open to vehicular travel. The 23.6 miles of vehicular ways and mining roads and the currently cherry-stemmed roads near Cove and Rock Canyons would be in the nonwilderness area and would be open to vehicular use as described for the No Action/No Wilderness Alternative.

Harvest of woodland products in the 27,000-acre wilderness would not be allowed except for the harvest of pinyon nuts or the noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means for use in the WSA. The remaining 46,100 acres would be open to woodland harvest, however, no harvest is anticipated because the resource is remote and inaccessible and there are alternate sources outside the WSA.

Visual resources on the 27,000 acres of wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 46,100 acres would be managed as VRM Class II on 5,700 acres and Class III on 40,400 acres, as currently set forth in the Henry Mountain MFP.

- Action Scenario

No surface disturbance is projected for the designated portion of the WSA. There are no mining claims and only 40 acres of oil and gas leases in this area. Implementation of this alternative would preclude new mineral location and mineral leasing in the designated area.

It is projected that implementation of the Small Partial Wilderness Alternative would result in approximately 62 acres of surface disturbance in the short term in the nondesignated portion of the WSA. This is the same disturbance as projected for the No Action/No Wilderness Alternative because all of the mining claims (2,700 acres), 99 percent of the acreage (26,043 acres) leased for oil and gas, and all of the proposed range developments are in the nondesignated area.



# FIDDLER BUTTE WSA

About 34 acres would be disturbed due to uranium exploration activities as discussed for the No Action/No Wilderness Alternative.

Approximately 18 acres of disturbance is projected for construction of access roads to five State sections in the nondesignated area for purposes of possible mineral exploration. An additional 10 acres of disturbance is projected for one spring development, one spring renovation, and renovation of eight livestock reservoirs.

Because the tar sand resource would be in the non-designated area, long-term development of tar sand would be as described for the No Action/No Wilderness Alternative. In the long term, 15,100 acres would be disturbed by roads, drill pads, and pipelines. Approximately 1,150 to 6,900 acre-feet of water per year and a work force of 60 to 350 employees would be required for 20 to 100 years.

Recreation use is expected to increase over the current estimated use of 60 visitor days per year at a rate of 2 to 7 percent annually. About 25 percent of the total use would be from vehicular activity, mostly involving 23.6 miles of existing ways.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

This WSA contains 73,100 acres and is approximately 12 miles at its widest (east-west) point by

11 miles at its longest point. Portions of the WSA west of the Dirty Devil River are contiguous with a 22,000-acre area in the Glen Canyon NRA proposed for wilderness designation by the NPS.

- Naturalness

West of the Dirty Devil River (22,200 acres) the WSA is in a completely natural condition. Here there are no human intrusions requiring rehabilitation.

East of the Dirty Devil River, the quality of naturalness varies considerably. The top of The Block, an isolated mesa of about 3,500 acres in the WSA, is essentially pristine and has few, if any, signs of human activity. Portions of the benchlands around The Block are natural but there are several intrusions.

In the southeast portion of the WSA, The Cove contains approximately 1 mile of ways and 7.5 miles of maintained pre-FLPMA cherry-stemmed roads. The sparse vegetation and general lack of topographic screening make intrusions substantially noticeable.

There is a pre-FLPMA mining road approximately 3.5 miles in length that follows the west fork of Rock Canyon to a point near the southwest corner of The Block. This intrusion was also deleted from the WSA through cherry-stemming.

A way (approximately 6 miles) connects the two areas described above, but it is substantially unnoticeable. There are also several stock reservoirs in the vicinity that were considered substantially unnoticeable.

There are approximately 16.6 miles of roads and ways north of The Block in the Fiddler Butte and North and South Hatch Canyon areas. While there is no current mining activity, uranium exploration and assessment work are ongoing. Portions of these roads are graded and are substantially noticeable intrusions. There is an old airstrip in South Hatch Canyon that is being reclaimed naturally, but it is still substantially noticeable. Between 1980 and 1982 limited tar sand and uranium exploration and construction of a small livestock reservoir occurred in areas that were later added to the WSA as a result of appeals on the BLM 1980 Intensive Inventory Decision. Tar Sand exploration consisted of approximately 6 miles of road and eight drill holes in the vicinity of South Hatch Canyon. Disturbed areas have been rehabilitated. Thirteen holes were drilled along existing access routes for uranium exploration. The drill pads,



# FIDDLER BUTTE WSA

Table 1  
Summary of Environmental Consequences

Alternatives				
Resource	No Action/No Wilderness	All Wilderness (73,100 Acres)	Large Partial Wilderness (32,700 Acres) (Proposed Action)	Small Partial Wilderness (27,000 Acres)
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 62 acres because of uranium exploration and development, construction of access roads to State in-held lands, and rangeland projects, and would be indirectly reduced in quality on up to 1,462 acres. Special features would not be significantly affected. In the long term, wilderness values would be indirectly lost on an additional 15,100 acres and would be indirectly reduced in quality throughout the WSA. Vehicular use of 23.6 miles of ways and future mining roads would detract from opportunities for solitude and primitive recreation. This would not complement goals of the NPS for wilderness management of contiguous NRA lands. Special features such as the wild and scenic river qualities of the Dirty Devil River, Class A scenery, and cultural values would be negatively affected over the long term.</p>	<p>Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 38 acres of the WSA because of uranium exploration and development, construction of access roads to State in-held lands, and rangeland projects, and indirectly reduced in quality on up to an additional 731 acres. Special features would be preserved. This alternative would complement NPS goals for wilderness management of contiguous NRA lands.</p>	<p>Wilderness values would be preserved overall in the designated area which is approximately 45 percent of the WSA. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 62 acres because of uranium exploration and development, construction of access roads to State in-held lands, and rangeland projects, and indirectly reduced in quality on up to 1,462 acres more. Almost all of the direct impact would be in the nondesignated area. Use of 23.6 miles of ways and future mining roads would detract from solitude and primitive recreation. In the long term, tar sand development would result in direct loss of wilderness values on 12,800 acres of the WSA in the nondesignated portion and would indirectly reduce the quality of opportunities for solitude and primitive recreation and scenic values throughout the WSA. The best special features including most Class A scenery and the Dirty Devil River would be preserved in the designated area. Cultural values, special status species, and wildlife would be disturbed but because of required mitigation would not be significantly affected in the nondesignated area. This alternative would complement the NPS proposal for wilderness management on contiguous NRA lands.</p>	<p>Wilderness values would be preserved overall in the designated area which is approximately 37 percent of the WSA. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on less than 62 acres of the WSA because of uranium exploration and development, construction of roads for access to State in-held lands, and rangeland projects, and indirectly reduced in quality on up to 1,462 acres more. All of the direct impact would be in the nondesignated area. Use of 23.6 miles of ways and future mining roads in the nondesignated portion would detract from opportunities for solitude and primitive recreation. Over the long term, tar sand development would result in direct loss of wilderness values on 15,100 acres of the WSA in the nondesignated portion, and would indirectly reduce opportunities for solitude and primitive recreation throughout the WSA. The best special features including the Dirty Devil River and most Class A scenery would be preserved in the designated area. This alternative would complement the NPS proposal for wilderness designation of the contiguous NRA lands.</p>



# FIDDLER BUTTE WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (73,100 Acres)	Large Partial Wilderness (32,700 Acres) (Proposed Action)
Impacts on Air Quality	Over the short term, air quality would not be significantly reduced by activities in the WSA. Without new technology for extraction of oil from tar sand, long-term development would reduce air quality and with variances could exceed PSD Class I limitations in Canyonlands National Park.	Air quality would not be affected by activities inside the WSA.	Over the short term, air quality would not be reduced by activities in the WSA. Without new technology for extraction of oil from tar sand, long-term development would reduce air quality and with variances could exceed PSD Class I limitations in Canyonlands National Park.
Impacts on Geology and Topography	Geologic and topographic features of the WSA would be altered on 21 percent (15,100 acres) of the WSA.	Geologic and topographic features would not be significantly affected because disturbance would be minimized and tar sand would not be developed.	Geologic and topographic features would be altered in the long term on 18 percent (12,800 acres) of the WSA.
Impacts on Soils	Increases in soil erosion would be significant (44 percent) on a localized basis. Discharge into the Dirty Devil River would not be significant because of required mitigation and small flows in drainages.	Impacts on soils and a 1-percent increase in erosion would be insignificant.	Increases in soil loss would be significant (37 percent) on a localized basis. Discharge into the Dirty Devil River would not be significant because of required mitigation and small flows in drainages.
Impacts on Vegetation	Over the long term, vegetation types would be altered or destroyed on 21 percent of the WSA. Individual plants of special status species may be destroyed but the viability of populations would be maintained.	Vegetation types would not be significantly altered and special status species would be protected.	Over the long term, vegetation types would be altered or destroyed on 18 percent (12,800 acres) of the WSA. Individual plants of special status species may be destroyed but the viability of populations would be maintained. Vegetation types and special status species would receive additional protection on 45 percent of the WSA.
			Over the long term, vegetation types would be altered or destroyed on 21 percent of the WSA. Individual plants of special status species may be destroyed but the viability of populations would be maintained. Vegetation types and special status species would receive additional protection on 37 percent of the WSA.



**Table 1 (Continued)**  
**Summary of Environmental Consequences**

17



# FIDDLER BUTTE WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives			
	No Action/No Wilderness	All Wilderness (73,100 Acres)	Large Partial Wilderness (32,700 Acres) (Proposed Action)	Small Partial Wilderness (27,000 Acres)
Impacts on Livestock Management	In the short term, livestock management would not be affected. In the long term, available livestock forage in one allotment would be reduced by 12 percent for the duration of the tar sand activities.	Restrictions on access would result in inconvenience to four livestock permittees in one allotment. Management costs would increase slightly.	In the short term, the methods and costs of livestock management would not be affected. In the long term, available livestock forage in one allotment would be reduced by 12 percent for the duration of the tar sand activities. Access would not be affected because the 23.6 miles of ways would remain open to unrestricted use by the four permittees.	Impacts would be the same as with the Large Partial Wilderness Alternative.
Impacts on Visual Resources	Visual resources would be degraded throughout the WSA and VRM objectives would not be met in the directly disturbed areas (15,100 acres) in the eastern portion of the WSA.	Visual resources would be preserved overall.	Visual resources would be preserved overall in the designated portion which is 45 percent of the WSA. VRM class objectives would not be met on 12,800 acres in the nondesignated area disturbed by tar sand development.	Visual resources would be preserved overall in the designated portion which is 37 percent of the WSA. VRM class objectives would not be met on 15,100 acres in the nondesignated area disturbed by tar sand development.
Impacts on Cultural Resources	In the long term, sites in the eastern portion of the WSA would be adversely affected under this alternative. Continued vehicular access to the unit may cause both intentional and unintentional damage to cultural resources. Cultural resource management would continue without regard to wilderness management.	The benefits of protection from surface disturbance would outweigh potential damage from increased vandalism from wilderness designation. Closure to all vehicular activity would protect sites from unintentional damage and generally decrease accessibility in the unit. Management of cultural resources would be restricted in scope and execution to protect other wilderness values.	Forty-five percent of the WSA including eight recorded sites would receive protection as a result of wilderness designation under this alternative. The remainder of the WSA including 32 recorded sites would be adversely affected by tar sand development and possibly ORV use. Intentional vandalism and artifact collection may increase.	Thirty-seven percent of the WSA including three recorded sites would receive protection as a result of wilderness designation under this alternative. In the long term, the remainder of the WSA including 37 known sites would be adversely affected. Intentional vandalism and artifact collection may increase.



# FIDDLER BUTTE WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives		
	No Action/No Wilderness	All Wilderness (73,100 Acres)	Large Partial Wilderness (32,700 Acres) (Proposed Action)
Impacts on Recreation	<p>Opportunities for vehicular-based recreation would be maintained as tar sand development occurs. Over the long term, opportunities for primitive recreation would be significantly reduced in quality or eliminated from the eastern portion of the WSA. Wild and scenic river values of the Dirty Devil River would be altered.</p>	<p>This alternative would benefit primitive recreation by reducing surface-disturbing activities and increasing management attention and recognition of primitive recreation values. ORV use would be eliminated from the WSA but would not decline on a regional basis because vehicle use is low and there are other vehicle use areas near the WSA. Wild and scenic river values of the Dirty Devil River would be preserved.</p>	<p>Primitive recreation opportunities would be preserved on 45 percent of the WSA. Over the long term, as tar sand development occurs, opportunities for primitive recreation would be significantly reduced in quality or eliminated in the nondesignated area. Approximately 23.6 miles of ways would remain open for vehicular use on the remaining 55 percent (40,400 acres) of the WSA further reducing the quality of primitive recreational opportunities. Wild and scenic river values of the Dirty Devil River would be preserved.</p>
	<p>Economic conditions would not be significantly affected in the short term. In the long term, there would be major beneficial and adverse effects on all economic sectors and infrastructure of Wayne, Garfield, Sevier, and possibly Emery Counties from the tar sand and water developments in the Dirty Devil River system.</p>	<p>Economic conditions would not be significantly changed in the short term. In the long term, major beneficial or adverse impacts on the economic sectors and infrastructure of Wayne, Garfield, Sevier, and possibly Emery Counties from tar sand development in the WSA would not occur. Economic impacts from water consumptive projects upstream of the WSA in the Dirty Devil River system may not occur.</p>	<p>Economic conditions would not be significantly affected in the short term. In the long term, there would be major beneficial and adverse effects from tar sand development as described for the No Action/No Wilderness Alternative. Impacts from potential water consumptive projects upstream of the WSA may not occur.</p>
Impacts on Economic Conditions	<p>Economic conditions would not be significantly affected in the short term. In the long term, there would be major beneficial and adverse effects from tar sand development as described for the No Action/No Wilderness Alternative. Impacts from potential water consumptive projects upstream of the WSA may not occur.</p>	<p>Economic conditions would not be significantly affected in the short term. In the long term, there would be major beneficial and adverse effects from tar sand development as described for the No Action/No Wilderness Alternative. Impacts from potential water consumptive projects upstream of the WSA may not occur.</p>	<p>Economic conditions would not be significantly affected in the short term. In the long term, there would be major beneficial and adverse effects from tar sand development as described for the No Action/No Wilderness Alternative. Impacts from potential water consumptive projects upstream of the WSA may not occur.</p>



## FIDDLER BUTTE WSA

approximately 20 by 50 feet in size, have been rehabilitated. Uranium assessment was also done on State land in the southeastern part of the WSA in 1981. A cherry-stemmed road was used for access. The livestock reservoir covers approximately a 0.25 acre and is located south of the Sewing Machine. New access was not required for construction.

Overall, 64,300 acres of the WSA meet the Wilderness Act criteria for naturalness.

- Solitude

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) in the WSA are influenced by size, topography, vegetation, and absence of distracting sights and sounds. This WSA has a wide variety of topographic features, and the quality of solitude varies considerably.

In the canyons of North Wash and the Dirty Devil River, the quality of solitude is outstanding due to the number, variety, size, and configuration of several isolated canyons. Although they are relatively short in length, their number and twisting configuration, when considered together, offer dispersion for visitors. Vegetation is sparse in these areas and is not a contributing factor to solitude. There are no outside sights and sounds that would adversely affect the visitor's ability to find a secluded spot, with the exception of areas immediately adjacent to Highway U-95. Overall, opportunities for solitude in this portion of the WSA (22,100 acres) are outstanding.

The top of The Block (North and South Block) contains about 3,500 acres of land in an irregular configuration. Overall size and configuration could force visitors into close proximity to each other at some locations, particularly the land bridge connecting the North and South Blocks. Vegetation screening is provided by dense pinyon-juniper woodland vegetation and moderate topographic screening. There are scenic views of the Henry Mountains, Dirty Devil River Canyon, Dark Canyon, Cataract Canyon, Canyonlands National Park, and the Abajo Mountains that enhance the experience of solitude. Opportunities for solitude on The Block are judged outstanding.

The benchlands surrounding The Block generally consist of low, rolling hills with sparse, low-growing vegetation. Topography would force visitors into traveling around the base of The Block or the other buttes in the area. Solitude is adversely affected by some of the mining activity, roads, and ways in the

immediate area, such as in The Cove and around Fiddler Butte. These factors impair opportunities for solitude, which were judged less than outstanding in this eastern portion of the WSA (39,400 acres).

The dominant feature of the northeastern portion of the WSA is an unnamed mesa located between the North and South Hatch Canyons. The mesa top is sparsely covered with pinyon-juniper woodland and brush. Visitors would be forced into close proximity in this area. The surrounding benchlands contain sparse vegetation resulting in little chance for seclusion for visitors. Opportunities for solitude in this portion of the WSA are considered less than outstanding (8,100 acres).

Overall, approximately 25,600 acres in the WSA are considered to possess outstanding opportunities for solitude.

- Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relationship to the WSA's size, the number and variety of recreational opportunities present, and an evaluation of the quality of these opportunities. The recreational opportunities vary depending on location in the WSA.

In the western portion of the WSA, recreational opportunities for dayhiking are considered outstanding in the canyons of North Wash due to the variety of hiking routes and ease of access (bordered by Highway U-95). This area (22,200 acres) meets the standards of the Wilderness Act for outstanding opportunities for primitive and unconfined recreation.

Opportunities for backpacking and photography are outstanding along the Dirty Devil River and The Block. These two areas constitute about 10,500 acres.

Recreational opportunities are less than outstanding in the benchlands east of the Dirty Devil River, and this area does not offer a diversity of recreational opportunities that could be considered outstanding. This area covers about 40,400 acres.

- Special Features

Special features of this WSA identified during the BLM Wilderness Inventory include cultural resources (with a high potential for finding additional sites), the



# FIDDLER BUTTE WSA

scenery along the canyons of the Dirty Devil River, and the views from The Block.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. The endangered peregrine falcon, black-footed ferret, and Sclerocactus wrightiae, an endangered cactus, may occur in the WSA. In addition, there are six special status animal species and three special status plant species that are likely to occur in the WSA. The WSA may have desert bighorn sheep which is a wilderness associated species. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. Approximately 26,000 acres or 36 percent of the WSA is rated Class A for scenic quality. The WSA contains a 4-mile segment of the Dirty Devil River which is a Nationwide River Inventory Segment with potential for study and addition to the National Wild and Scenic Rivers system.

## Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland, blackbrush, saltbush-greasewood, and galleta threeawn shrub steppe. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation Units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, and Provo-Orem, Utah.

## Air Quality

The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979). The air quality in the WSA and surrounding area is generally excellent. It is classified as a PSD Class II area under the provisions of the Clean Air Act as amended. The WSA is within 6 miles of Canyonlands National Park, a Class I area.

## Geology and Topography

The Fiddler Butte WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. In general, this province is characterized by

deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

All exposed formations are sedimentary and range in age from Early Permian to Middle Jurassic. The formations are, in ascending order, the White Rim Sandstone, Moenkopi, Chinle, Wingate, Kayenta, and Navajo.

The WSA is on the northwest edge of the gently dipping Monument Upwarp, and is bordered on the west by the Henry Basin. Numerous joints and normal faults with minor displacement trend northwesterly across the WSA.

The Dirty Devil River splits the WSA, but only a short stretch of the river is included within the WSA. Topography west of the Dirty Devil River consists of high, narrow ridges cut deeply and abruptly by narrow, meandering canyons. East of the river, the topography changes to low rolling hills and benchlands above the Colorado River.

## Soils

The soils in the WSA are mostly shallow or semi-shallow desert sandy loams. Table 2 summarizes soil erosion conditions in the WSA. Soil erosion conditions were determined using soil surface factors (terms are defined in the Glossary). Sediment yields vary from moderate to high.

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	17,544	24	47,369
Moderate	1.3	24,123	33	31,360
Slight	0.6	31,433	43	18,860
Stable	0.3	0	0	0
Total		73,100	100	97,589

Sources: USDI, BLM, 1978c and 1979c; Lelfeste, 1978.

Soil salinity class estimates range from nonsaline to moderate with an estimated average salinity production of 62 lb of salt per acre per year.

Seeding potential varies from unsuited to seeding to poor due to steep slopes, rock outcrops, sandy (droughty) and shallow soils. Portions of the WSA have deeper soils on moderate slopes which provide for fair to good seeding success.



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## Vegetation Including Special Status Species

The WSA's existing vegetation includes blackbrush, mixed desert shrub, shadscale, pinyon-juniper woodland, and assorted grasses and forbs. The WSA also contains approximately 11,455 acres of rock outcrops and sand that support little or no vegetation. Table 3 summarizes major vegetation types. Small areas of riparian vegetation are found along the Dirty Devil River and around springs and in wash bottoms. The acreage of riparian vegetation is small and has not been listed on Table 3.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Barren (rock outcrop, badlands)	11,455	16
Blackbrush	20,800	28
Desert shrub	8,920	12
Shadscale	23,400	32
Pinyon-juniper woodland	5,925	8
Grasses and forbs	2,600	4
Total	73,100	100

Source: USDI, BLM, 1983b.

One endangered plant species, Sclerocactus wrightiae, may occur in the WSA. One Category 1 and two Category 2 candidate species may also occur in the WSA. These are Pediocactus winkleri (which may be proposed for listing in the near future by FWS), Eriogonum cronquistii, and Spiranthes diluvialis (see Appendix 4 in Volume I).

The Fiddler Butte WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 4.

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	41,050	56
Blackbrush	24,750	34
Saltbush-greasewood	4,900	7
Galleta threeawn shrubsteppe	2,400	3
Total	73,100	100

Source: USDI, USGS, 1978.

## Water Resources

The Fiddler Butte WSA lies within the Dirty Devil River subbasin of the Upper Colorado River hydrologic subregion. There are two main drainages within this WSA. The west side of the WSA drains into the Dirty Devil River which in turn flows into Lake Powell. The east side of the WSA drains into North Wash which also flows into Lake Powell. North Wash is an ephemeral drainage.

Known surface waters in the WSA include two springs (Cove and South Hatch Canyon) 13 livestock reservoirs, and about 4 miles of the Dirty Devil river. Other springs/seeps probably exist in the major canyons (Marinus, Stair, and Butler). These canyons flow into North Wash. The Dirty Devil River is the only perennial stream in the WSA. There is a high potential for flash flooding during thunderstorm periods in the canyon section of the WSA. There are no quantitative or qualitative data regarding these water sources.

This WSA lies within Water Rights Adjudication Area 95. This area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit. Temporary and fixed time applications over 0.015 cfs on the Dirty Devil River could be considered (UDNRE, DWR, 1988).

The water quality standard for Dirty Devil River and tributaries (from Lake Powell to Fremont River) is Class 3C (protected for nongame fish and other aquatic life).

Utah's 1986 305(b) Water Quality Assessment Report shows the Dirty Devil River to have impairments to its beneficial uses from high levels of TDS and sodium from the probable source categories of natural sources, agriculture-irrigated cropland and grazing.

Present and proposed uses of Muddy Creek, a tributary to the Dirty Devil River, include irrigation, power generation, coal mining, and municipal uses in Emery County. Another tributary, the Fremont River, provides irrigation water to Sevier and Wayne Counties. A reservoir has been proposed for the Fremont River upstream of the WSA by the Wayne County Water Conservancy District for hydroelectric generation and irrigation.



## Mineral and Energy Resources

The energy and mineral resource rating summary is given in Table 5. Refer to Appendix 5 in Volume I for a description of the mineral rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Tar sand	f4	c4	More than 500 million barrels
Uranium	f2	c3	Between 500 and 1,000 metric tons uranium oxide
Gold	f2	c2	Less than 100,000 troy ounces
Silver	f2	c2	Less than 500,000 troy ounces
Copper	f2	c2	Less than 50,000 metric tons

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver could occur in medium-sized amounts in the WSA.

### • Leasable Minerals

With the exception of the tar sand resource, there are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

### • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin, which has oil and gas production established to the east; the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them; the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and the lack of any oil and gas production

established from any of the oil and gas wells drilled in the area. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic feet of gas (f2).

The WSA is rated as having a moderate potential for hydrocarbon accumulations in stratigraphic and structural traps within Mississippian and Pennsylvanian rocks (Molenaar, et al., 1983). The area has a moderate potential for oil and gas based on reported oil shows in nearby wildcat wells (USDI, USGS, 1985b and 1985c).

The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. The WSA lies in an area within the basin where Pennsylvanian and Permian sedimentary facies change to carbonate from basal shales and evaporates. This facies change is favorable for the formation of stratigraphic hydrocarbon traps. In addition, due to the WSA's position within the Paradox Basin, where the basin changes from a penesaline facies to carbonate shelf facies, the possibility exists for biotherm and oolite shoal buildups within Mississippian and Pennsylvanian rocks. It is possible that as oil accumulated and moved through the rocks within the basin, it may have become pooled within these stratigraphic traps. Evidence suggests oil has moved through the sedimentary rocks in the area and resulted in the oil impregnated rock deposit within Tar Sand Triangle.

Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to contain 3 to 5 million barrels of oil each, and average 40 to 80 acres in size in the eastern portion of the Paradox Basin.

A number of exploration wells have been drilled within or near the WSA. Approximately half of these wells were drilled to test the tar sand potential of the White Rim Sandstone. The other half of the wells, located primarily to the north and west of the WSA, have been drilled to rocks as old as Cambrian. Only one deep well has been drilled in the WSA. A few of the deeper wells have reported oil and gas shows from Triassic, Permian, and Pennsylvanian rocks. All wells have been plugged and abandoned.



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Based on the available information, the certainty of occurrence for oil and gas is rated low (c2). The certainty that these small scattered accumulations exist in the area is low based upon the WSA's location within the Paradox Basin and the limited number and extent of oil shows within or near the WSA.

Under the current land use plan, 70,283 acres are in Category 1 (standard stipulations) and 2,817 acres are in Category 2 (special stipulations). There are presently 12 pre-FLPMA oil and gas leases covering 26,083 acres. All of these leases are under application for conversion to combined hydrocarbon leases.

- Tar Sand

There is an estimated 5 billion barrels of oil in the White Rim Sandstone Member of the Cutler Formation and 4 million barrels in the Cedar Mesa Member of the Cutler and Moenkopi Formations (Bishop, 1985). The above estimates are for the oil impregnated rock deposit within the Tar Sand Triangle as a whole. Within this deposit, there is one dominant pay zone of heavy oil impregnated sandstone within the White Rim Sandstone. For the deposit, the thickness of the pay zone varies from 0 to 230 feet. The average net pay zone is 112 feet and the average grade is 3.6 gallons of oil per ton of rock. Approximately 41,250 acres of the WSA are located in the Tar Sand Triangle STSA. An estimated 59 square miles (37,760 acres) of the WSA is underlain by the tar sand deposit (as defined by the 0-foot isopach map of the net pay zone). The thickness of the deposit within the WSA ranges from 0 to approximately 140 feet. Therefore, the estimated average thickness of tar sand within the WSA is 70 feet. About 26,083 acres of existing oil and gas leases within the STSA are under application for conversion to combined hydrocarbon leases.

Using these figures, the estimated oil reserve from tar sand within the WSA is approximately 695 million barrels of oil. Using the criteria presented by SAI (1982), there is potential for a large sized tar sand resource within the WSA (f4). The certainty that the tar sand occurs is high (c4), based on drill hole and rock outcrop information. Estimates based on past studies indicate that approximately 30 percent of the in-place oil could be recovered by in-situ methods. Therefore, approximately 208.5 million barrels

of recoverable oil could be contained mainly within the eastern portion of the WSA.

- Locatable Minerals

There are no known deposits of locatable minerals in the WSA. Approximately 135 mining claims exist covering 2,700 acres.

- Uranium

The WSA contains the Shinarump, Monitor Butte, and Mossback Members of the Triassic Chinle Formation. These formations are known to be uranium-bearing within and adjacent to the WSA (USDI, USBM, 1982). Most uranium prospects occur in the Monitor Butte Member. The average grade of uranium from mines and prospects in the area, is less than 0.02 percent (USDI, USGS, 1985c). Evidence suggests that paleo channels, authigenic dolomite and carbonaceous mudstone, which are indicators of uranium mineralization, are present in the vicinity of the WSA. Based on the general low grade of uranium identified in the area and apparent lack of continuity between the deposits, the WSA is rated as an (f2), potential for less than 500 to 1,000 metric tons of uranium oxide. The certainty that the uranium occurs within the tract is moderate (c3).

- Other Locatable Minerals

Geologic and geochemical studies indicate that there is a low potential for metals other than uranium in the WSA (USDI, USGS, 1985c). Most silver assays are 0.2 ounces per ton or less; two samples of Cedar Point assayed 0.4 and 0.6 ounces per ton. These values are considered too low for commercial exploitation. Copper values did not exceed 0.03 percent, except for three samples assaying 0.09, 0.14, and 0.20 percent; these values are also too low for commercial mining (USDI, USGS, 1985c).

Copper is produced as a by-product of uranium recovery in the area. It is associated primarily with the Shinarump Member of the Chinle Formation. Most uranium in the WSA is reported from the Monitor Butte Member. Nevertheless, copper staining has been reported in association with uranium in the area. The overall tract rating is (f2/c2); potential for small amounts of metallic, locatable minerals within the WSA, with a low degree of certainty.



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## • Salable Minerals

There are abundant deposits of riprap and flagstone in the WSA. Possibilities of any significant quantities being developed are negligible because of the remoteness of the area and the difficulty in access.

## Wildlife Including Special Status Species

Game animals in the WSA include mule deer, cottontail, and desert bighorn sheep. The WSA also provides habitat for several furbearers and numerous small mammal species. Depending on the season of the year, a variety of avian species may occur in the WSA. Feral goats may occasionally be sighted.

The entire WSA (73,100 acres) provides substantial range for desert bighorn sheep and limited value range for mule deer. Desert bighorn sheep have been reintroduced into the area on adjacent NPS-administered land. The UDWR has proposed transplanting bighorn sheep into the WSA.

There are no existing or proposed facilities designed exclusively for wildlife. Wildlife utilize the existing spring and livestock reservoir developments as water sources.

Two endangered species (the peregrine falcon and black-footed ferret) may occasionally inhabit the area. Neither are definitely known to be in the WSA.

The WSA contains excellent peregrine falcon habitat. No critical or crucial habitats have been identified. The golden eagle, considered sensitive by BLM, is found throughout the WSA. Bald eagles could pass through portions of the WSA during migration. Bell's vireo, also considered sensitive, might be found in the WSA. Four Category 2 candidate animal species, Tanner's black camel cricket, Great Basin Silverspot butterfly, ferruginous hawk, and white-faced ibis, may also frequent the area (see Appendix 4 in Volume I). If present, most of these species would inhabit riparian areas or steep cliff faces in the canyon systems. However, the ferruginous hawk inhabits pinyon-juniper woodland areas where there are ecotones or edges that provide opportunities for nesting, cover, and hunting.

## Forest Resources

The only forest resources within the WSA are about 5,925 acres of noncommercial pinyon-juniper woodland (less than 20 board-feet per acre per year wood volume growth). The resource is remote and inaccessible; therefore, there is no projected utilization of the resource.

## Livestock and Wild Horses/Burros

There are four allotments currently recognized, including two unallocated allotments (Flint Trail and Little Rockies estimated to contain 13 AUMs) for an estimated 1,057 AUMs in the WSA. Refer to Table 6 for summary information on these grazing allotments.

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Cedar Point	52,152	920	1,892	31	225 Cattle	08/16-05/31	3
Sewing Machine	56,939	49,482	1,599	1,013	299 Cattle	11/01-04/30	4
Little Rockies	29,475	22,038	85	0	Unallotted		
Flint Trail	31,552	660	1,322	13	Unallotted		
Total	170,118	73,100	4,898	1,057			7

Sources: BLM File Data.



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Those portions of the WSA west of the Dirty Devil River include the Little Rockies and Cedar Point Allotments. The Little Rockies Allotment is within an unallotted area where there is no livestock grazing or rangeland improvements.

Areas east of the Dirty Devil River are in the Sewing Machine Allotment and, to a small degree, in the Flint Trail Allotment, which is an unallotted area. There is no livestock grazing in the Flint Trail Allotment at this time.

Within the WSA, there are 13 reservoirs and one spring development, all located within the Sewing Machine Allotment. There are eight reservoir reconstructions, one spring renovation, and a spring development proposed. There are no proposals for vegetation treatment within the WSA.

The approximately 23.6 miles of vehicular ways and mining roads and the 11 miles of cherry-stemmed roads near the Cove and Rock Canyons are used for access to range improvement projects and for livestock management. Predator control in the allotments included in the Fiddler Butte WSA has not been carried out for several years (USDA, APHIS, 1988). There are no wild horses or burros in this WSA.

## Visual Resources

The WSA possesses high scenic values. The canyons of the North Wash drainage are characterized by sheer cliffs, colorful rock formations, and sparse vegetation. Immediately west of the Dirty Devil River is a line of cliffs over 1,000 feet high. Hatch Canyon is also visually interesting. In the wide canyon surrounded by high, clifted mesas, colors vary from white to dark brown. Also, east of the Dirty Devil River there are several red buttes and large mesas known as the North and South Blocks.

The southwest boundary of the WSA along the North Wash is visible from Highway U-95, a major travel route eligible for designation as a scenic highway under the Highway Beautification Act of 1965. Portions of Hatch Canyon and the Dirty Devil River are visible from a secondary travel route leading through the Poison Springs Wash and South Hatch Canyon to the Glen Canyon NRA.

The BLM VRM ratings for the WSA's visual characteristics are shown in Table 7. The BLM VRM rating system is explained in Appendix 7 in Volume I.

Table 7  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	26,000	36
Scenic Quality Class B	47,100	64
Scenic Quality Class C	—0	—0
Total	73,100	100
Management Class I	0	0
Management Class II	30,550	42
Management Class III	42,550	58
Management Class IV	—0	—0
Total	73,100	100

Source: USDI, BLM, 1982c.

## Cultural Resources

A total of 40 sites have been recorded in the WSA and most of them are located in the eastern portion of the unit (USDI, BLM, 1988a). A majority of the sites (34) are surface lithic scatters and are generally small in size. Five of the lithic scatter sites contain partially buried fire hearths. Three sites contain ceramic artifacts attributed to the Pueblo II and Pueblo III periods of the Kayenta Anasazi archaeological culture and are all located on The Block. Five of the sites are attributed to Archaic occupation, one is attributed to Late Prehistoric Numic speaking peoples, and the cultural affiliation of the remaining sites is unknown. Two rockshelters have been identified in the WSA. One contains remains of Anasazi habitation and storage structures while the other contains both prehistoric and historic artifacts. Five of the unit's prehistoric sites are eligible for nomination to the National Register of Historic Places. There are five historic sites in the WSA. All of these represent short-term camps dating between the 1920s and the 1960s and none are National Register eligible.

Six inventories have been conducted in the WSA (USDI, BLM, 1988a). Three of these consist of a series of small plots of 10 acres or less in size and comprise approximately 120 acres. No sites were recorded as a result of these inventories. One 160-acre quadrant was surveyed in the unit as a result of the Central Utah Coal Project; however, no sites were found (Hauck, 1977). During the BLM 1977 Under the Ledges Planning Unit 1-percent sample project, one 160-acre quadrant was surveyed within the WSA and four sites were recorded. As a result of survey for the Tar Sand Triangle Project (USDI, NPS and BLM, 1984) 32 sites were identified within the unit. An estimated average site density of 24 sites per square



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mile (864 sites per 23,000 acres) was computed for the entire Federal lease area which encompasses portions of the Fiddler Butte WSA. None of these inventories was specifically designed for the WSA, hence, statistics based on them may be unreliable. However, the potential for finding additional sites in the unit is exceptionally high. Based on available data, the vast majority of these sites would probably be insignificant lithic scatters, but additional rockshelters, Anasazi architectural sites, habitation sites, large lithic quarries, and rock art sites may also be found.

### Recreation

Sixteen recreational opportunities were evaluated for their quality in this WSA. Thirteen opportunities are present in varying degrees. There are four distinct areas in this WSA (canyons of the North Wash, canyons of the Dirty Devil River, The Block, and benchlands east of the Dirty Devil River), and the recreational opportunities have wide variations in quality.

Backpacking and camping opportunities are fair in the side canyons of the North Wash due to the canyon's short length, lack of campsites and water, and limited opportunities for loop trips. The longest of these canyons, Marinus Canyon, has a hiking route of approximately 6.5 miles. However, this same area has very good opportunities for dayhiking due to the ease of year-round access and the variety of short trips.

A portion of the WSA south of Poison Springs Wash (including the Dirty Devil River and the mouth of Hatch Canyon) is adjacent to potential wilderness in the Glen Canyon NRA. Here, extended trips are possible, assuming a car shuttle is used. Two hiking routes, each 5 miles in length, connect with a 20-mile route in the NRA that ends at Hite Crossing. There is potential for a 4-mile side trip up Fiddler Cove Canyon. Good quality opportunities for photography can be found in this portion of the WSA.

During periods of high water in the spring (April to June), it is possible to canoe or float down the Dirty Devil River from Poison Springs Canyon to Lake Powell. While no data on participation in this activity are collected, it is believed that use is light, less than 20 parties per year. The 4-mile section of the river within the WSA is a Nationwide Rivers Inventory Segment with potential for study and addition to the National Wild and Scenic Rivers system. Since it is an inventory-listed segment, the BLM must, as part of its environmental review process, avoid or mitigate adverse impacts to the river and consult with the

NPS before taking any action that could foreclose wild, scenic, or recreational river status (CEQ, 1980).

No recreational opportunities are considered of particularly good quality in the benchlands east of the Dirty Devil River. In general, the size and configuration of this area, its low physical features, and intrusions related to mining activity limit opportunities for hiking, camping, backpacking, and other activities. The many roads and 23.6 miles of ways in this area and The Block contribute to recreational access. The extent to which they are used for this purpose is not accurately known, but is estimated to account for as much as 15 visitor days annually.

The Block (North and South Block) has opportunities for dayhiking, backpacking, camping, photography, and sightseeing. There is one primitive trail leading on to the top of the South Block. From there, a narrow ridge, or land bridge, provides access to the North Block. Overall, the terrain, vistas, and remote location of this mesa contribute to outstanding opportunities for backpacking and photographing scenic vistas.

Primitive recreational use is estimated at 45 visitor days annually. Use is low due to a lack of publicity, remote location, difficult access to much of the area, and other competing recreational areas nearby. A small number of commercial permits have been issued to one commercial operator since 1980. The southwest boundary is U-95, Utah's highly scenic Bicentennial Highway, therefore, that portion of the WSA is readily accessible to recreationists.

Total recreational use in the WSA is estimated to be 60 visitor days per year. Vehicular use, currently estimated at 15 visitor days annually, mostly occurs on the 23.6 miles of existing ways.

### Land Use Plans

The WSA is BLM-administered public land except for six State sections (3,836.1 acres). The current policy of the State of Utah is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands. In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. Of the 3,836.1 acres of in-held State land; 3,198.1 acres are under grazing permit; 1,918.1 acres are leased for oil, gas, and hydrocarbons; and



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1,280 acres are leased for metals. The only current activity on these lands is grazing (UDNRE, UDSLF, 1988).

The Fiddler Butte WSA is in Garfield County. The Garfield County Master Plan (Five County Association of Governments, 1984) covers this WSA. The master plan recognizes that the County possesses "... some of the most spectacular scenery in the United States ... The county is sparsely populated and most of it is in its original pristine condition." In the plan, the county proposed that 111,053 acres of BLM land in three WSAs and 31,600 acres of FS lands in one FS roadless unit within Garfield County be recommended to the Utah Congressional Delegation as wilderness. The Fiddler Butte WSA was not included in this acreage, but rather was recommended to be retained for such multiple uses as forestry, livestock grazing, mining, wildlife, and recreation. The Garfield County Commission has endorsed the Consolidated Local Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under the BLM Henry Mountain MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action/No Wilderness Alternative. The Henry Mountain MFP has been officially reviewed by the Governor of Utah and found to be consistent with State plans. Wilderness is not addressed in the Henry Mountain MFP. Wilderness designation is part of the BLM multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative.

A 22,000-acre NPS wilderness proposal in the Glen Canyon NRA is adjacent to portions of the WSA west of the Dirty Devil River.

### Socioeconomics

#### • Demographics

The WSA is in Garfield County, one of Utah's least populated and most rural counties. In 1980, the Garfield County population was about 3,700, reflecting a population density of 0.71 persons per square mile (USDC, Bureau of the Census, 1981; University of Utah, BEBR, 1982).

From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 8 presents the baseline and projected population data for Garfield County. It is

estimated that between 1980 and 1987, population increased to about 4,085. Population projections for the county indicate that the number of people living in

Table 8  
Baseline and Projected Population and Employment Growth  
Garfield County

	1980	1990	2000	2010
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200

Source: Utah Office of Planning and Budget, 1987.

Garfield County in the year 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

The only community close to the WSA is Hanksville, a small community of approximately 350 people located about 25 road miles north of the WSA in Wayne County. Ticaboo, located 32 road miles south of the WSA in Garfield County, provides limited services.

#### • Employment

Garfield County is one of the poorest counties in the State of Utah (South, et al., 1983). Table 8 shows the baseline and projected total employment for Garfield County to the year 2010. Garfield County is part of the Southwest MCD. Table 9 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

Table 9  
Southwest Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	6,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

In 1980, the leading employment sectors for the MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining



provided approximately 2 percent of the direct employment in the MCD. It is projected that by the year 2010, employment in the MCD will more than double and that services will increase to 20 percent and trade to 25 percent of the total. Agriculture and mining will decline to less than 1 percent of the total MCD employment. Government will decline to 18 percent of the total.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 10  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	0	\$52,166
Mining Claim Assessment	\$13,500	0
Livestock Grazing	\$21,140	\$1,628
Recreational Use	\$ 246	Unknown
Total	\$34,886	\$53,794

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has approximately 135 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment and income.

Ten livestock operators have a total grazing privilege of 1,057 AUMs within the WSA, including one unallocated allotment estimated to contain 13 AUMs that are presently unused. If all forage in the WSA were utilized, it would account for \$21,140 of livestock sales including \$5,285 of ranchers' returns to labor and investment.

The WSA's recreational use is low. Related local expenditures are low and are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational

use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicated that the Statewide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use of the Fiddler Butte WSA is estimated as about 60 visitor days per year.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 10).

Oil and gas (including tar sand) leases in the WSA cover approximately 26,083 acres. At \$2 per acre, lease rental fees generate up to \$52,166 of Federal revenues annually. Half of these monies are returned to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, there are 1,057 AUMs in the WSA that could potentially be used. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$1,628 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume IV and the Description of the Alternatives for the Fiddler Butte WSA.

In the short term, the 62 acres of projected disturbance would affect less than 0.08 percent of the WSA and would not result in significant impacts on any resources. The following analysis focuses mainly on the affects of tar sand development over the long term.

However, the effects of tar sand development in the long term would be extensive and cannot be analyzed fully in this document. A brief introduction to the effects of tar sand development in the WSA is included. For more information on the impacts of tar sand development in the Fiddler Butte WSA, the reader is referred to the Tar Sand Triangle Draft EIS (USDI, NPS and BLM, 1984) and the Utah Combined Hydrocarbon Leasing Regional Final EIS (USDI, BLM, 1984c).



## FIDDLER BUTTE WSA

### No Action/No Wilderness Alternative

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 30,550 acres).

In the foreseeable future, disturbance of approximately 62 acres from uranium exploration in the eastern portion of the WSA and from spring and reservoir developments and renovations would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Eight of the acres of disturbance would be for access to five State sections. Special features, including Class A scenery, cultural values, special status species, wildlife associated with wilderness, and the Dirty Devil River, would not be significantly affected because the disturbance would be minor involving only 0.08 percent of the WSA, the disturbance would generally not be located where the special features are located, and stipulations would be applied to mitigate impacts. The proposed spring and reservoir developments and renovations would benefit wildlife associated with wilderness because of increased water sources. Appropriate measures would be taken to protect cultural and special status species prior to any surface-disturbing activity, and it is projected that impacts to these values would not be significant.

Long-term development of the tar sand resource would significantly alter the wilderness values of the WSA. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be lost on an additional 21 percent (15,100 acres) of the WSA in areas of direct disturbance. Such special features as Class A scenery, cultural values, special status species, wildlife associated with wilderness, and the Dirty Devil River would be significantly disturbed and altered. Long-term development of uranium would not add significantly to the disturbance. Refer to the Visual Resource, Cultural Resource, and Vegetation and Wildlife Including Special Status Species sections for more information.

During the period of activity, the visual and audible disturbance from mineral exploration and mineral and rangeland developments would reduce the quality of

opportunities for solitude and primitive recreation and scenic values not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 2 percent (1,462 acres) of the WSA could be so affected in the short term. In the long term if tar sand is developed, the sights, sounds, and emissions of mineral and energy activities would reduce the quality of these values not only throughout the Fiddler Butte WSA, but also in the Dirty Devil, Horse-shoe Canyon (South), and French Spring-Happy Canyon WSAs, the NPS-proposed wilderness in the Glen Canyon NRA, and possibly in the Canyonlands National Park.

Although future vehicular use would generally be limited by terrain to existing vehicular ways and to any roads developed for mineral-related purposes, some additional disturbance from ORV activity is likely in portions of the WSA. This and the continued and increased vehicular use of existing ways and future uranium and tar sand roads would detract from the quality of opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would not be expected to significantly reduce the quality of wilderness values because the additional use would be largely primitive in nature and the WSA is large enough to incorporate the additional use adequately especially when the contiguous Glen Canyon NRA lands are taken into consideration.

This alternative would not complement goals of the NPS for wilderness management of the contiguous NRA.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 62 acres of the WSA and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,462 acres. Over the long term, naturalness, opportunities for solitude and primitive recreation, and special features would be directly lost on 15,100 acres. Over the long term, scenic values and opportunities for solitude and primitive recreation would be indirectly reduced in quality throughout the WSA. The wild, scenic, and recreational values of the Dirty Devil River would be reduced in quality during the period of tar sand development.



# FIDDLER BUTTE WSA

## • Impacts on Air Quality

In the short term, disturbance of 62 acres from exploration, access road construction, and improvement of rangeland developments would not be a major source of emission and, therefore, would have little effect on the air quality of the area. However, in the long term, tar sand development under current technology, would likely include a commercial-scale upgrading plant and in-situ field that would produce pollutant emissions and hydrocarbon odors similar to a conventional oil refinery and well field (USDI, NPS and BLM, 1984). These emissions would consist of total suspended particulates, sulfur dioxide, carbon monoxide, and volatile organic compounds that would cause a localized decrease in visibility during the life of the operation, with a potential loss in visual range in the vicinity of the Canyonlands National Park. However, the WSA would continue to be managed by the State of Utah as a PSD Class II area and air quality would be reduced only up to the PSD Class II limitations. Also, the proximity of the WSA to Canyonlands National Park may result in further restriction of tar sand development to meet PSD Class I limitations. Studies on proposed in-situ development for the Tar Sand Triangle STSA, using current technologies, show that PSD limitations would be exceeded at production levels as low as 5,000 barrels per day (USDI, NPS and BLM, 1984). Therefore, production of oil from tar sand in the WSA could only proceed at rates of less than 5,000 barrels per day or be dependent on granting of variances to the PSD standards or development of alternative technologies. Disturbance of 15,100 acres would result in increases in fugitive dust emissions with additional potential for loss in visual range in the vicinity of Canyonlands National Park. Because disturbance would proceed over long periods of time, reclamation would be ongoing and would reduce impacts from fugitive dust.

Conclusion: Over the short term, air quality would not be reduced. However, in the long term, without new technology for extraction of oil from tar sand, air quality could be reduced and with variances could exceed PSD Class I limitations in Canyonlands National Park for 20 to 100 years.

## • Impacts on Geology and Topography

In the short term, projected uranium exploration, road construction, and rangeland development would only occur on up to 62 acres and would not affect the area's geology. Tar sand development on 37,760 acres of tar sand in the WSA by in-situ methods

would result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in 15,100 acres of the WSA. Drilling, road construction, or rangeland improvements would not alter the overall land form but would create localized changes on topographic features.

Conclusion: Geologic and topographic features of the WSA would be altered in the long term on 21 percent (15,100 acres) of the WSA.

## • Impacts on Soils

It is estimated that in the short term, only 62 acres of soil would be disturbed by uranium exploration roads and rangeland development. This is less than 0.01 percent of the WSA. In the long term, tar sand development would disturb 15,100 acres. Assuming that all disturbance would occur in critical erosion class areas and that erosion condition would increase one class, soil loss on the 62 acres would increase from 40,770 cubic-yards per year to 81,450 cubic-yards per year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation would probably be about 5 years. Therefore, under this alternative, maximum annual soil loss in the WSA would increase from an estimated 40,770 cubic-yards per year (44 percent) to 132,984 cubic-yards per year. Because of the requirement for holding ponds, normally enforced on public lands, and the small amount of water flow in the drainages of the area, increased sediment yield to the Dirty Devil River would be small.

Conclusion: Increases in soil erosion would be significant (44 percent) on a localized basis. Discharges into the Dirty Devil River would not be significant.

## • Impacts on Vegetation Including Special Status Species

Approximately 16 percent (11,455 acres) of the WSA consists of bare rock outcrops and steep slick-rock canyons. The remaining 84 percent (61,645 acres) of the WSA is vegetated with pinyon pine, juniper, mid grasses, blackbrush, and assorted grasses, shrubs, and forbs. Over the short term, 62 acres of disturbance would affect less than 1 percent of the vegetation in the WSA. Over the long term, 15,100 acres of disturbance could denude up to one-fourth of the WSA's sparse vegetation. If this development occurred, rehabilitation of the area to its former vegetation composition might be impossible, possibly



causing portions of existing and PNV types to be permanently modified through scarring of the landscape.

Four special status plant species (including the endangered Sclerocactus wrightiae) may occur in the WSA. Three of the species have a wide spread distribution in the pinyon-juniper woodland and desert shrub communities where surface disturbance could occur. The remaining species, Spiranthes diluvialis, is located only in riparian areas where no surface disturbance is projected to occur. The habitat of all of the special status species extend beyond the WSA boundaries. Before authorizing any surface-disturbing activities, BLM would require site-specific clearances of the potentially disturbed areas. If any threatened or endangered plant species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when necessary (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, while surface-disturbing activities could result in the inadvertent loss of some individual plants of these species, threats to the continued existence of any of the species would not occur. Because necessary measures would be taken to protect these species, the viability of populations of special status species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Over the long term, composition of vegetation types and individual plants of special status species would be altered or destroyed on about 21 percent of the WSA but the viability of populations would be maintained.

## • Impacts on Water Resources

Over the short term, mineral exploration and other anticipated activities would affect less than one-tenth of 1 percent of the WSA and would be confined near the surface. This would not alter ground or surface water flows, quality, or uses.

In the long term, extensive tar sand development would disrupt the recharge of the area's springs, increase erosion and sedimentation in the drainages of the area, degrade groundwater quality through injection of low quality surface water and release of pollutants through the extraction process, and reduce the flow of the Dirty Devil River, within permitted limits.

Sedimentation in drainages would not significantly affect surface water quality because precipitation is low and, with the exception of 4 miles of the Dirty Devil River, all streams are ephemeral.

Water injected into the tar sand as part of the in-situ extraction process would be high in salts and the extraction process would release hydrocarbons to the groundwater. The extent of groundwater pollution that would occur is unknown but would likely be extensive.

Diversion of up to 6,900 acre-feet of water from the Dirty Devil River would reduce the average annual flow of the river by approximately 12 percent. Water requirements of about 11,000 acre-feet per year for over 100 years for tar sand development outside the WSA could further reduce flow in the river (USDI, NPS and BLM, 1984). Use of groundwater would affect spring flows and ultimately reduce flows in the river, but by a smaller amount. Because the Dirty Devil River is high in salinity (1,500 to 2,000 milligrams per liter), reduction in flows would actually remove several thousand tons of salt from the Colorado River system (USDI, NPS and BLM, 1984). However, reductions in flow would reduce opportunities for canoeing or recreation on the river.

Commitment of water for use in tar sand oil extraction over long periods of time may conflict with upstream development for other consumptive uses of water such as coal mining, powerplant cooling, and agriculture. However, a reservoir proposed on the Fremont River by the Wayne County Water Conservancy District could be built and operated without wilderness considerations. Storage of water in a reservoir during peak flow periods could eliminate opportunities for camping and float boating through the WSA. Any reductions in the flow of springs in the vicinity of the Tar Sand Triangle could reduce the availability of water for livestock and wildlife. The potential for reduction in spring flows is unknown.

Conclusion: In the short term, ground and surface water quality and quantity would not be significantly affected. Over the long term, the tar sand development would reduce the quality of groundwater, reduce salinity in the Colorado River, reduce the flow of the Dirty Devil River, and compete with other potential consumptive water uses in the Dirty Devil River system.



- Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to mineral exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Over the short term, 62 acres of surface disturbance and associated activities would affect less than one-tenth of 1 percent of the wildlife habitat in the WSA. This would not result in reductions in wildlife populations. An insignificant loss of habitat would result from increases in use of vehicles in the WSA in the future. The affect of occasional vehicle activity in the area would likely be negligible for most species; however, any desert bighorn sheep using the area would be sensitive to noise and intrusion and would probably migrate out of areas along roads, ways, and trails.

In the long term, disturbance of 21 percent (15,100 acres) of the WSA and continuous tar sand production activities would remove habitat and disrupt wildlife, including the endangered peregrine falcon and the candidate wildlife species. Mobile species would leave the disturbed areas for at least the duration of activities. Some individual animals would perish and populations would be reduced. As much as 21 percent of the substantial value yearlong desert bighorn sheep range in the WSA would be disturbed; therefore, bighorn sheep would leave and would not become established in the eastern part of the WSA.

Reduction of spring flows as a result of pumping of groundwater for extraction of oil from tar sand would be detrimental to wildlife and could make certain habitats unusable. The extent of the potential effect on water flows and the resultant reductions in wildlife populations is unknown.

The affect on special status species would be evaluated at the project development stage and mitigation would be required. Although individual animals would be affected by tar sand development, the existence of special status species would be preserved.

Reclamation of 15,100 acres in the WSA could improve habitat for some species at the conclusion of tar sand activities.

Conclusion: Over the long term, tar sand development would reduce available habitat for special status and most other species on 21 percent of the WSA. Populations of some species would be reduced in the WSA. Reclamation efforts would improve habitat for other species.

- Impacts on Livestock Management

Domestic livestock grazing would continue at an estimated 1,057 AUMs as authorized in the Henry Mountain MFP including about 13 AUMs in a presently unallotted allotment. Existing roads and ways could continue to be used for livestock management. The existing spring and 13 reservoirs in the WSA could be maintained and the proposed renovation of the spring and eight reservoirs and construction of one spring development could be carried out. In the short term, disturbance of 62 acres would affect much less than 1 percent of the livestock forage in the WSA.

In the long term, surface disturbance of as much as 15,100 acres from exploration and development could reduce available forage for cattle. If all 15,100 acres of disturbance were within the Sewing Machine Allotment, a likelihood due to its location within the Tar Sand Triangle STSA, as much as 12 percent (122 AUMs) of the forage in the allotment could be disturbed and/or destroyed, thus reducing the available AUMs accordingly. If successful, reclamation of disturbed areas would provide additional forage for livestock.

Conclusion: In the long term, livestock forage in one allotment would be reduced by 12 percent for the duration of tar sand activities.

- Impacts on Visual Resources

In the short term, even though mitigation measures would be applied to minimize visual contrast, disturbance of 62 acres by uranium exploration, access roads and rangeland developments would reduce visual quality in areas throughout the eastern portion of the WSA. Views in approximately 2 percent (1,462 acres) of the WSA would be affected.

Even though mitigation measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 15,100



## FIDDLER BUTTE WSA

acres of surface disturbance from tar sand exploration and development would be degraded and VRM Class II and III management objectives would probably not be met during the long term. Even after mitigation and rehabilitation, some permanent degradation would result. Loss of visual quality associated with vegetation removal for tar sand development would be unavoidable and would persist for 70 years or longer (USDI, NPS and BLM, 1984). With tar sand development, visual quality would be significantly reduced in the eastern part of the WSA and indirect reduction would occur throughout the WSA.

Conclusion: Visual resources would be degraded throughout the WSA. VRM objectives would not be met in the directly disturbed areas in the eastern part of the WSA.

- Impacts on Cultural Resources

In the short term approximately 62 acres would be disturbed. All sites in the WSA would continue to receive protection under existing Federal and State antiquities laws. Any surface disturbance would be preceded by standard inventory and mitigation procedures; however, sites that cannot be identified by surface inspection may be inadvertently damaged or lost. In addition, increased activity in these areas may provide opportunities for illegal artifact collection.

With this alternative all 73,100 acres of the WSA would remain open to ORV use and 23.6 miles of way would remain open to vehicular access. ORV activity does not currently constitute a significant use of the WSA and probably will not become important in the future due to topographic constraints. Although it is unlikely to occur, some cultural resources may receive unintentional damage as a result of ORV activity. In addition, general vehicular access to the unit on existing roads and trails may increase artifact collection and vandalization opportunities (Nickens, et al., 1981).

The entire WSA would remain open to mineral location and leasing; thus, tar sand development may occur in the long term. Disturbance of approximately 15,100 acres is anticipated in the eastern portion of the unit where most of the recorded sites are located. Because of the nature of tar sand extraction processes and the concentration of archaeological sites in the area most likely to be effected, significant disturbance of cultural resources may occur under this alternative. Approximately 37 of the recorded sites

and probably hundreds of unrecorded sites may be impacted by future tar sand development.

Under this alternative archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

Conclusion: In the long term, sites in the eastern portion of the WSA would be adversely affected by tar sand development and possibly ORV use. Intentional vandalism and artifact collection may increase.

- Impacts on Recreational Use

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (UDNRE, ORA, 1980; UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Jungst, 1978; Hof and Kaiser, 1981 and Cordell and Hendee, 1982), it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the foreseeable future. Therefore, recreational use could increase from the present 60 visitor days per year to between 110 and 520 visitor days per year by the year 2020. Use would remain primarily primitive in nature.

Over the short term, uranium exploration and access and rangeland developments would directly disturb less than 1 percent of the WSA. This would not significantly affect recreational use. However, the 23.6 miles of vehicular ways, 11 miles of existing roads, and new mineral exploration roads would remain open for vehicular use. Increases in use of vehicles would reduce the quality of the primitive recreation experience in the WSA, however, vehicle-based recreation will probably remain a minor part of the overall visitation to the WSA.

Over the long term, 15,100 acres of disturbance for tar sand development and new access would eliminate opportunities for primitive recreation in the eastern portion of the WSA and would indirectly degrade primitive recreation opportunities throughout the WSA. Tar sand development in the Tar Sand Triangle STSA within or near the Fiddler Butte WSA would also indirectly degrade primitive recreational values in the adjoining Dirty Devil, Horseshoe Canyon (South), and French Spring-Happy Canyon WSAs, the proposed wilderness in the Glen Canyon NRA, and Canyonlands National Park, where there would be increases in



sounds, airborne emissions, and possible reductions in visual range (USDI, NPS and BLM, 1984).

Even with mitigation, the wild, scenic, and recreational values of the Dirty Devil River would be reduced in quality during the period of tar sand development.

**Conclusion:** Over the long term, opportunities for primitive recreation would be directly eliminated in the eastern portion of the WSA and indirectly reduced in quality in adjacent WSAs and NPS-proposed wilderness in the Glen Canyon NRA and Canyonlands National Park.

## • Impacts on Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present.

In the long term, tar sand development would lead to a significant increase in population, employment, and income for Garfield and Wayne Counties. Employment of 350 persons would be an 8-percent increase in the projected Garfield and Wayne Counties' total employment in 2010. It would create extensive changes in socioeconomic conditions affecting all economic sectors and the infrastructures of Hanksville and possibly Ticaboo and Green River, Utah. A detailed study of the beneficial and adverse effects of tar sand development within the Fiddler Butte WSA has not been completed. For information on the nature of social and economic impacts of tar sand development in the general vicinity of the WSA, the reader is referred to the Tar Sand Triangle Draft EIS (USDI, NPS and BLM, 1984) and the Utah Combined Hydrocarbon Leasing Regional Final EIS (USDI, BLM, 1984c). Beneficial impacts would include increased employment, income, and tax base. Adverse affects include the need for additional infrastructure such as water and sewage treatment, law enforcement, housing, and schools. In the long term, tar sand development would reduce livestock forage and related sales and ranchers' return to labor and investment.

Potential water consumptive projects upstream of the WSA, including coal mining, electric power generation, irrigation, municipal water, and a reservoir proposal on the Fremont River, could be developed without wilderness considerations. These would be major economic developments in Sevier, Wayne, and Emery Counties.

Recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the foreseeable future. Because recreational use in the area is small and recreation related expenditures average only \$4.10 per visitor day, recreation-related expenditures attributable to the WSA would likely not be significant to the local economy. Potential increases in nonprimitive recreation could lead to increases in recreation-related income. In the long term, tar sand development could reduce or eliminate primitive recreation and related local income. Because existing primitive recreational use is only about 45 visitor days per year, this loss would not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. In addition to the 26,083 acres presently leased for oil and gas (\$52,166 in lease fees), there are 47,017 acres in the WSA open to oil and gas leases that are currently not leased. If all were leased, it would bring up to \$94,034 additional Federal lease fee revenues per year in addition to new royalties from lease production if oil and gas were discovered. Tar sand production would bring a royalty of 12.5 percent for products removed from the lease area. Assuming a 30,000-BPD operation, royalties would be substantial. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (up to \$1,628 per year) would continue unless tar sand development disturbed sufficient acreage to require reductions in livestock forage use.

**Conclusion:** Economic conditions would not be significantly affected in the short term. In the long term, there would be both beneficial and adverse effects on all economic sectors and infrastructures in Wayne, Garfield, Sevier, and possibly Emery Counties as a result of projected tar sand and water developments in the Dirty Devil River system.

## All Wilderness Alternative (73,100 Acres)

### • Impacts on Wilderness Values

Designation and management of all 73,100 acres as wilderness would contribute to the preservation of wilderness values in the Fiddler Butte WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would



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be protected on 64,300 acres that meet and 8,800 acres that do not meet naturalness criteria. Solitude would be protected on approximately 25,600 acres that meet and 47,500 acres that do not meet the standards for outstanding opportunities. Primitive and unconfined recreation would be protected on approximately 32,700 acres that meet and 40,400 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including scenery, cultural values, endangered and sensitive species, wildlife associated with wilderness, and the Dirty Devil River, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of valid existing rights. In the foreseeable future, disturbance of up to 20 acres is anticipated from uranium exploration in the eastern portion of the WSA and development of rangeland projects. An additional 18 acres of disturbance would be attributed to providing access to State sections. No significant increase in disturbance would be anticipated for uranium development over the long term. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA. As much as 1 percent (731 acres) of the WSA could be so affected. Special features would not be significantly affected because the direct disturbance would involve only 0.05 percent (38 acres) of the WSA, and generally the disturbance would not be located where the special features are located. Rangeland developments would benefit wildlife special features because water sources would increase. Appropriate measures would be taken to protect special status species and cultural values prior to any surface-disturbing activity, and no significant negative impact would occur. Mitigation to protect wilderness values would be applied, but loss of wilderness values would be allowed if development involving valid existing rights could not be otherwise achieved. Rangeland projects, on the other hand, would be designed to meet wilderness management criteria. Overall, the disturbance would not be substantially noticeable in the area as a whole.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims.

The gradual increase in visitor use that would occur would be primitive in nature and would be managed to protect wilderness values.

Wilderness designation of that portion of the WSA along the Dirty Devil River would complement the values and uses of adjacent NPS-proposed wilderness because it would serve as an access route to that area.

Tar sand development in the Tar Sand Triangle STSA outside but adjacent to the WSA would degrade wilderness values in the WSA through sounds, airborne emissions, and reductions in visual range. The magnitude of the potential loss is unknown but would continue for the life of the tar sand projects, approximately 130 to 160 years.

Conclusion: Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 38 acres of the WSA and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 731 acres. Special features would be preserved.

### • Impacts on Air Quality

In the long term, air quality would benefit from the reduction of possible disturbance from 15,110 acres to only the 38 acres projected for the short term. It is unlikely that fugitive dust from exploration of uranium within the WSA would reduce visibility in the WSA as a whole or in adjacent WSAs or NPS-managed areas.

Conclusion: Air quality would not be affected by activities inside the WSA.

### • Impacts on Geology and Topography

Effects on the geologic structure or topographic features of the WSA that would result from 38 acres of surface disturbance would not be significant because only a small portion of the WSA would be disturbed.

Conclusion: Geologic and topographic features would not be significantly affected.



## • Impacts on Soils

The soil resource would benefit from the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities. It is estimated that up to 38 acres would be disturbed in the foreseeable future. Assuming that all disturbance would occur in areas with a critical erosion class and that erosion condition would increase one class, soil loss on the 38 acres would increase from an estimated 103 cubic-yards per year to 206 cubic-yards per year. However, soil loss would decrease as reclamation occurred. The time required for complete reclamation cannot be determined but would probably be at least 5 years after disturbance. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an estimated 103 cubic-yards per year (1-percent increase over present soil loss) to approximately 92,317 cubic-yards per year.

Conclusion: Impacts on soils and a 1-percent increase in erosion would not be significant.

## • Impacts on Vegetation Including Special Status Species

A projected 38 acres would be disturbed in the short term. This would not significantly alter the composition of vegetation types in the WSA. Some individual special status plant species could be inadvertently lost, but populations would not be threatened. BLM would require appropriate clearances as discussed for the No Action/No Wilderness Alternative.

Conclusion: Vegetation types would not be significantly altered by 38 acres of surface disturbance and special status species would be protected.

## • Impacts on Water Resources

Surface water in the WSA (springs, seeps, and the Dirty Devil River) could be expected to benefit from this alternative because of the reduced likelihood of surface disturbance from tar sand activities disrupting the recharge area. Because precipitation is low, no significant sedimentation or change in TDS is expected to occur because of an estimated annual increase in soil loss of 103 cubic-yards from surface disturbance of 38 acres.

In-situ tar sand development in areas adjacent to the WSA could, over time, lower quality of the groundwater in this WSA. However, with this alternative,

probability of tar sand development in the Tar Sand Triangle STSA would be lower and present water quality would remain in the WSA for a longer period because the aquifer would not be injected directly. Lower quality water could migrate into the area from distant injection activities (USDI, NPS and BLM, 1984). The time required for groundwater contamination through migration cannot be determined with the limited information available.

Development in the Dirty Devil River system including the Fremont River from its headwaters on the Fish Lake National Forest through the Sevier, Wayne, and Garfield Counties, and Muddy Creek from its headwaters on the Manti-Lasal National Forest through Emery County would be hampered because changes in use, changes in points of diversion, or transfer of water rights could be protested by the Federal Government to maintain flow through the WSA. Potential uses of water upstream of the WSA include diversions from the headwaters of Muddy Creek for coal mining on the Wasatch Plateau, diversions and transfers of water rights for coal-fired powerplants in Emery County, construction of a reservoir on the Fremont River in Wayne County for irrigation and hydroelectric power generation, diversions for municipal water and irrigation in Sevier, Emery, and Wayne Counties, and diversions for tar sand development in Wayne and Garfield Counties.

Conclusion: In the short term, ground and surface water quality and quantity would not be affected. In the long term, groundwater quality could be affected by tar sand development outside the WSA. Future water diversions and new consumptive uses in the Dirty Devil River system upstream of the WSA in Sevier, Wayne, Garfield, and Emery Counties may be hampered or restricted.

## • Impacts on Mineral and Energy Exploration and Production

### • Leasable Minerals

Twelve pre-FLPMA oil and gas leases (26,083 acres) are located in the WSA. These leases are under application for conversion to combined hydrocarbon leases which could be developed for oil and gas subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed for oil and gas or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be renewed.



Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of potential oil and gas recovery.

Approximately 41,250 acres of the WSA are part of the Tar Sand Triangle STSA. The 26,083 acres of existing oil and gas leases are under application for conversion to combined hydrocarbon leases. If converted, the combined hydrocarbon leases would be post-FLPMA and subject to wilderness protection stipulations. Because stipulations would be restrictive, no development is anticipated following wilderness designation.

The potential for recovery of an estimated 208.5 million barrels of oil would be foregone. This is equivalent to 11 percent of the projected U.S. daily petroleum product demand of 18.39 million barrels by the year 2010 (SAI, 1982).

## • Locatable Minerals

There are approximately 135 mining claims (primarily for uranium) that cover about 2,700 acres of the WSA. Claims can be located up to the time of designation. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. Less than 500 metric tons of uranium oxide could occur in the WSA. However, if locatable minerals, including uranium, are not within claims filed prior to designation, the potential for recovery would be foregone. Therefore, with wilderness designation, the potential to recover an unknown amount of uranium would be foregone over the long term.

## • Salable Minerals

Salable mineral development would not be allowed. Because of the remoteness of the area and difficulty in access, saleable minerals would not be developed in any case. Therefore, the loss of salable mineral production potential would not be significant.

Conclusion: Long-term potential for production of 208.5 million barrels of oil from tar sand and an unknown amount of uranium oxide would be foregone.

## • Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife would benefit from this alternative due to the preservation of solitude and naturalness. Desert bighorn sheep may migrate or be transplanted into the area with this alternative.

The 38 acres of surface disturbance that could occur from mineral exploration and development would disrupt some wildlife populations and result in mobile species (such as deer) leaving the disturbed areas for the duration of activities. Less mobile species (such as the side-blotched lizard) would either perish or co-exist with the disturbances at smaller and less viable population levels. With this alternative less than 1 percent of substantial value yearlong desert bighorn sheep habitat and limited value mule deer habitat within the WSA would be disturbed. Therefore, this disturbance would not adversely affect the distribution and abundance of bighorn sheep and mule deer. The peregrine falcon and black-footed ferret which may occasionally inhabit the area, and the bald eagle (endangered), which may occasionally visit the area, and other special status species would avoid the disturbed area. However, overall, these species as a whole would not be adversely affected because less than 0.1 percent of the WSA would be disturbed.

Conclusion: Wildlife habitat and populations would be protected and would benefit from solitude.

## • Impacts on Livestock Management

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP (currently estimated at 1,057 AUMs of which 13 AUMs are unallocated). Use of existing livestock developments could continue as in the past. Although existing ways would be closed to vehicular use, they would continue to be used to maintain existing livestock developments, if permitted by BLM. The WSA has approximately 23.6 miles of way, many of which are used during the grazing season for distribution of salt by vehicle, maintenance of the existing rangeland improvement projects, and to collect vegetation trend data for evaluations. Restriction on vehicle use on some of the 23.6 miles of way would be an inconvenience to four of the seven permittees who manage livestock in the WSA. More management by horseback would be required. Increased costs and time to manage livestock inside the WSA would affect the four permittees. Restrictions on predator control would not affect livestock



management in this WSA where predator control has not been conducted for several years.

The 38 acres of potential disturbance would have no effect on livestock use of the WSA. Designation of the WSA as wilderness would prevent any short-term loss of forage due to tar sand exploration and development.

Conclusion: Restrictions on access would result in inconvenience to four livestock permittees in one allotment. Management costs would increase slightly.

## • Impacts on Visual Resources

With this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which allows for only natural ecological change) through closure of the entire area to ORV use, and through closure to future mineral leasing and location.

Phasing out oil and gas and combined hydrocarbon leases would reduce possible mineral-related surface disturbance to that associated with development of existing mining claims and access to State lands. Potential disturbance would be reduced to 38 acres. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. Because only 38 acres would be disturbed, visual quality would not be reduced in the WSA as a whole.

Conclusion: Visual resources would be preserved overall.

## • Impacts on Cultural Resources

With this alternative all 73,100 acres would be withdrawn from mineral location and closed to leasing and sale. No tar sand development would occur and except for an estimated 38 acres of disturbance, the WSA and all cultural resources in it would be protected from surface disturbance. In addition, archaeological sites would be protected from secondary impacts resulting from increased access and activity in the area.

All 73,100 acres would be closed to ORV use, thus eliminating any possibility of inadvertent damage to cultural resources. Approximately 23.6 miles of ways would be closed to recreational vehicular traffic. The elimination of vehicular access to the WSA would indirectly help protect archaeological sites from intentional vandalism and artifact collection (Nickens, et.al., 1981).

As recreational use of the unit increases in the future, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. Sites such as the rockshelters and Anasazi structural sites known to exist in the WSA may be attractive to commercial looters (Wylie, 1988). The protection of cultural resources from ORV activity, vehicular access, and surface development would, however, probably outweigh any increases in vandalism due to wilderness designation and increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness management policies (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied.

Conclusion: Closure to vehicular activity would protect sites from unintentional damage and generally decrease accessibility in the unit. Cultural resource management procedures would be restricted in order to protect other wilderness values.

## • Impacts on Recreational Use

This alternative would benefit primitive recreation by reducing the likelihood of surface-disturbing activities within the WSA, thereby protecting primitive recreation values and increasing management recognition of these values.

Vehicle-based recreation would be eliminated from the WSA and 23.6 miles of ways would be closed. Because vehicle use is low and there are other suitable ORV-use areas in the vicinity of the WSA, ORV use would not experience a significant decline on a regional basis.

Primitive-recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the foreseeable future in relation to population increases and current trends of recreational use. Management provided through a Wilderness Management Plan



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would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use.

Designation would provide additional protection to the wild and scenic qualities of the 4-mile section of the Dirty Devil River that is in the Fiddler Butte WSA.

Designation would complement use of the Glen Canyon NRA proposed wilderness because the portion of the Fiddler Butte WSA along the Dirty Devil River serves as access to the proposed NPS wilderness.

In the long term, tar sand development in the Tar Sand Triangle STSA outside but adjacent to the Fiddler Butte WSA would degrade the quality of primitive recreational values in the WSA through sounds, airborne emissions, and reductions in visual range.

Conclusion: The All Wilderness Alternative would benefit primitive recreation by reducing surface-disturbing activities and increasing management attention and recognition of primitive recreation values. ORV use would be eliminated in the WSA, but would not decline on a regional basis. Wild and scenic river values on the Dirty Devil River would be preserved.

### • Impacts on Economic Conditions

Overall there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there, could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10), as well as loss of potential increases in population, income, and Federal revenues that could occur with the No Action/No Wilderness Alternative as a result of tar sand development or water consumptive projects upstream of the WSA in the Dirty Devil River system.

The major economic benefits and drawbacks of tar sand production from the WSA (i.e., increased personal income and demands placed on community infrastructure) would not occur. However, tar sand production from the portion of the Tar Sand Triangle STSA outside the WSA could occur and could result in major socioeconomic impacts in Garfield, Wayne, and possibly Emery Counties (USDI, NPS and BLM, 1984). Because about one-fourth of the Tar Sand Triangle

STSA is within the WSA, the duration and size of potential tar sand projects in the region could be significantly reduced to the point that some projects could become infeasible.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action/No Wilderness Alternative. With the exception of uranium, the potential for locatable mineral development is low; it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. Potential for uranium recovery and related economic impacts would be foregone. Also, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with up to \$21,140 of livestock sales including \$5,285 of ranchers' return to labor and investment.

Recreation-related local expenditures would be small (average of \$4.10 per visitor day Statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 26,083 acres now leased would cause an eventual loss of up to \$52,166 per year of lease fees to the Federal Treasury. By not being able to lease 47,017 acres because of designation, \$94,034 per year in potential lease fees would be foregone. In addition to these rental fees, any potential royalties from new tar sand production would also be foregone.

Federal grazing fees would continue as at present with a possible collection of \$1,628 per year.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. One commercial outfitter occasionally uses the WSA.

Conclusion: Economic conditions would not be significantly changed in the short term. In the long term, major beneficial and adverse impacts on the economic sectors and infrastructures of Wayne, Garfield, Sevier, and possibly Emery Counties from tar sand development in the WSA or water uses upstream of the WSA in the Dirty Devil River system would not occur.



## Large Partial Wilderness Alternative (Proposed Action) (32,700 Acres)

### • Impacts on Wilderness Values

Wilderness designation of 32,700 acres would contribute to preservation of the area's wilderness values. Although in the short term, impacts would be about the same as identified for the No Action/No Wilderness Alternative, this Partial Wilderness Alternative would reduce the potential for surface-disturbing activities that could impair wilderness values over the long term in the designated area. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure (although none of the 23.6 miles of ways are in this area), and closure to future mineral leasing and location. Naturalness (32,700 acres), and outstanding opportunities for solitude (25,600 acres) and primitive recreation (32,700 acres) would be protected as would special features. This area includes the WSA's best quality special features including scenic areas and the Dirty Devil River. Desert bighorn sheep, a wilderness associated species, would be protected in the designated area.

In the short term, direct loss of naturalness and opportunities for solitude and primitive recreation due to allowable surface disturbance from uranium exploration in the designated area and from rangeland projects in the nondesignated portion would occur on up to 5 acres within the designated portion and on up to 57 acres within the nondesignated portion. Indirect reduction in quality of wilderness values would occur on up to an additional 2 percent (1,462 acres). Appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and it can be assumed that impacts to these features would not be significant.

In the 40,400-acre area that would not be designated, there would be up to an additional 12,800 acres (18 percent of the WSA) of surface disturbance from tar sand development over the long term. Tar sand development would eliminate naturalness (31,600 acres meet the standard) and opportunities for solitude and primitive recreation (rated as less than outstanding in this portion of the WSA) on the directly disturbed areas. Sights, sounds, and emissions of activities in the 40,400-acre area that would not be designated would result in an indirect loss of solitude and primitive recreation values not only throughout the nondesignated area but also within the designated area, espe-

cially in the area of The Block (North and South Blocks). The quality of vistas from within the WSA would be diminished. Sights, sounds, and emissions would also indirectly reduce solitude and primitive recreation values in the Dirty Devil, Horseshoe Canyon (South), and French Spring-Happy Canyon WSAs, in the NPS-proposed wilderness in the Glen Canyon NRA, and possibly in Canyonlands National Park.

Elimination of ORV use in the designated area would help preserve opportunities for solitude and primitive recreation in that portion of the WSA, although vehicular use of 23.6 miles of ways and future mineral exploration and development roads in the nondesignated area would detract from these opportunities.

Conclusion: Wilderness values would be preserved in the designated area which is approximately 45 percent of the WSA. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 62 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,462 acres. Over the long term, tar sand development would result in a direct loss of wilderness values, including naturalness, opportunities for primitive and unconfined recreation, and solitude, and special features on 12,800 acres in the nondesignated area, and would indirectly reduce the quality of scenic values and opportunities for solitude and primitive recreation throughout this and adjacent WSAs and NPS-proposed wilderness in the Glen Canyon NRA and in Canyonlands National Park. The Dirty Devil River would be protected by wilderness designation.

### • Impacts on Air Quality

Disturbance of 12,800 acres within the WSA as well as disturbance for tar sand development outside the WSA would affect air quality as described for the No Action/No Wilderness Alternative, but for a slightly shorter period of time.

Conclusion: Over the short term, air quality would not be reduced by activities in the WSA. Over the long term, without new technology for extraction of oil from tar sand, air quality could be reduced and with variances, could exceed PSD Class I limitations in the Canyonlands National Park.

### • Impacts on Geology and Topography

Impacts on geology and topography would be of the same nature as described for the No Action/No



Wilderness Alternative but would occur on a smaller portion of the WSA. In the long term, tar sand development on the 12,800 acres of the Tar Sand Triangle STSA in the nondesignated portion could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in the WSA.

Conclusion: Geologic and topographic features would be altered in the long term on 18 percent (12,800 acres) of the WSA.

## • Impacts on Soils

In the short term, surface disturbance and related impacts on soils would be the same as described for the No Action/No Wilderness Alternative. In the long term, tar sand development would disturb 12,800 acres in the nondesignated portion of the WSA. About 5 acres of soil would be disturbed by mineral exploration in the area that would be designated as wilderness. Short term disturbance would affect less than 0.1 percent of the WSA and would not affect soils significantly. Assuming that long-term disturbance would occur in areas with critical erosion condition and that erosion condition would increase one class, soil loss on the 12,800 total acres disturbed would increase from 34,560 cubic-yards per year to 69,120 cubic-yards per year. Soil loss would decrease as reclamation occurred. The time required for complete reclamation cannot be determined but would be at least 5 years. Therefore, under this alternative, maximum annual soil loss in the WSA would increase an estimated 34,560 cubic-yards per year (37 percent). Because of requirements for holding, ponds usually enforced on public lands, and the small amount of water flow in the drainages, increased sediment yield to the Dirty Devil River would be small.

Conclusion: Increases in soil loss would be significant (37 percent) on a localized basis. Discharge into the Dirty Devil River would not be significant.

## • Impacts on Vegetation Including Special Status Species

With this alternative, vegetation would be protected on the 32,700 acres that would be designated wilderness, except for 5 acres that would be disturbed by uranium exploration. Because potential uranium and tar sand resources and development activities would be in the area that would not be designated wilderness, approximately 57 acres would mainly be disturbed in the short term and 1,280 acres in the long

term. Short term disturbance would be small (less than 0.01 percent of the WSA) and would not significantly affect vegetation types or special status plant species. In the long term, about one-fifth (18 percent) of the WSA's sparse vegetation (all in the non-designated area) would be disturbed or denuded. Portions of the existing vegetation could be permanently modified through scarring of the landscape by access roads, tailing dumps, mill sites, commercial-scale up-grading plants, etc. Impacts on one endangered and three Category 1 and Category 2 candidate species would be as described for the No Action/No Wilderness Alternative. However, the potential for inadvertent disturbance of these species would be somewhat less with the Large Partial Wilderness Alternative than with the No Action/No Wilderness Alternative because the potential for surface disturbance related to use of ORVs would be less.

Conclusion: Vegetation types could be altered and individual special status plant species could be destroyed. The viability of populations of special status species would be maintained.

## • Impacts on Water Resources

Impacts on water quality would be essentially the same as described for the No Action/No Wilderness Alternative because uranium exploration and tar sand development would take place in the nondesignated area. The Dirty River would be in the designated area and effects of designation on water uses would be as described for the All Wilderness Alternative.

Disturbance and increase in erosion would be slightly less than with the No Action/No Wilderness Alternative (34,560 cubic-yards of sediment per year as compared to 81,540 with No Action/No Wilderness). The amount of increase would depend on such variables as where the disturbance occurs, the intensity of windstorms, rainfall during vulnerable periods, and the effectiveness of erosion control measures and reclamation. Because of required mitigation and because tributaries to the Dirty Devil River are ephemeral in this area, significant increases in sediment are not expected for the Dirty Devil River.

That portion of the WSA in the Tar Sand Triangle STSA in the designated area covers approximately 7,760 acres. Under this Partial Wilderness Alternative, this area would not be developed. Therefore, water for tar sand operation in the Tar Sand Triangle STSA would be required for fewer years than with the No Action/No Wilderness Alternative.



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Development of groundwater within the area that would be designated to help meet water requirements for production on adjacent areas would be foregone. Water from the nondesignated portion would be committed to tar sand industry uses for 100 more years.

In-situ tar sand development in the area that would not be designated and in areas adjacent to the WSA could lower quality of the groundwater in the WSA. Water quality would remain of a higher quality in the area that would be designated for a longer period because the aquifer would not be injected directly. Lower quality water would have to migrate from distant injection activities (USDI, NPS and BLM, 1984). The time for groundwater contamination through migration cannot be determined with available information.

**Conclusion:** Water quality would not be affected in the short term. Over the long term, tar sand development would reduce the quality of groundwater and reduce salinity in the Colorado River. Future water diversions and new consumptive uses in the Dirty Devil River system upstream of the WSA in Sevier, Wayne, Garfield, and Emery Counties may be hampered or restricted.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Because most of the uranium and tar sand potential is in the area that would not be designated, impacts would be approximately the same as described for the No Action/No Wilderness Alternative. The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 7,760 acres of pre-FLPMA oil and gas leases in the area that would be designated wilderness. These leases are under application for conversion to combined hydrocarbon leases. Oil and gas exploration activities on these leases could occur subject to the stipulations issued at the time of leasing.

Future leasing would not be allowed but, due to the small size of the potential oil and gas deposits, the low certainty that they exist, this alternative is not expected to result in a significant loss of recoverable oil and gas resources.

Approximately 7,760 acres (4 percent) of the Tar Sand Triangle STSA lie within the portion of the WSA that would be designated. If converted to

combined hydrocarbon leases, they would be post-FLPMA and subject to Wilderness Protection. Because these stipulations are restrictive, no development is anticipated.

Due to nonimpairment stipulations issued at time of leasing and closure to future leasing, tar sand development within the portion of the WSA that would be designated wilderness would not occur. The potential for recovery of an estimated 39 million barrels of oil would be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are approximately 18,323 acres of tar sand presently under lease conversion application in this area. Future leasing could occur in this area. Under this alternative, it is estimated that 169 million barrels of recoverable oil would have potential for exploration and recovery in the area that would not be designated.

#### • Locatable Minerals

Thirty-eight mining claims (760 acres) are within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines with wilderness considerations. After designation, lands not under mining claims would be closed to prospecting and development (USDI, BLM, 1981b).

Exploration for uranium is likely on valid claims in the vicinity of the Block even if the area is designated wilderness. If uranium is not within claims filed prior to designation, the potential for production of unknown amount of uranium oxide could be foregone over the long term in the area that would be designated wilderness.

Ninety-seven mining claims (1,940 acres) are within the area that would not be designated wilderness. Development work, extraction, and patenting could continue to occur on these claims. It is estimated that exploration and production of uranium oxide could occur on this portion of the WSA.

#### • Salable Minerals

Salable mineral development would not be allowed in the designated area. Because of the remoteness



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of the area and difficulty in access, salable minerals would not be developed in any case. Therefore, the loss of salable mineral production potential would not be significant.

Conclusion: Long-term potential for production of 39 million barrels of oil from tar sand and an unknown amount of uranium oxide would be foregone.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife would benefit from this alternative due to the preservation of solitude and naturalness on 32,700 acres that would be designated wilderness. In the designated area about 5 acres of surface disturbance would result from uranium exploration. Exploration would be completed in a short time and would not have an impact on overall wildlife habitat or populations in the designated area.

In the nondesignated area, impacts on wildlife habitat and populations would be essentially as described for the No Action/No Wilderness Alternative.

Over the short term, 57 acres of surface disturbance in the nondesignated area and associated activities would affect less than 0.01 percent of the wildlife habitat in the WSA. This would not result in reductions in wildlife populations. An unknown but probably insignificant loss of habitat would result from increases in use of vehicles in the nondesignated part of the WSA in the future. The affect of occasional vehicle activity in the area would likely be negligible for most species; however, any desert bighorn sheep using the area would be sensitive to noise and intrusion and would probably migrate out of areas along roads, ways, and trails. UDWR would continue desert bighorn sheep transplants and populations of bighorn would increase.

In the long term, disturbance of 18 percent (12,800 acres) of the eastern portion of the WSA and continuous tar sand production activities would disrupt wildlife, including bighorn sheep, the endangered peregrine falcon and Category 1 and 2 candidate wildlife species. Mobile species would leave the disturbed areas for the duration of activities. Individual animals would perish and some populations would be reduced. As much as 21 percent of the substantial value year-long desert bighorn sheep range in the WSA would be disturbed; therefore, bighorn sheep would leave and would not become established in the eastern part of the WSA.

Reduction of spring flows as a result of pumping of groundwater for extraction of oil from tar sand would be detrimental to wildlife and could make certain habitats unusable. The extent of the potential effect on water flows and the resultant reductions in wildlife populations is unknown.

Even though some individual animals would be affected by tar sand development, the existence of special status animal species would not be threatened, as discussed for the No Action/No Wilderness Alternative.

Reclamation of 12,800 acres in the WSA could improve habitat for some species at the conclusion of tar sand activities.

Conclusion: Wildlife habitat and populations would not be significantly affected in the short term. Wildlife populations would benefit from solitude on 45 percent of the WSA. Over the long term, tar sand development would reduce available habitat for special status and most other species. Populations of some species would be reduced but reclamation would improve habitat for others.

- Impacts on Livestock Management

In the area that would be designated wilderness livestock grazing would continue as authorized in the Henry Mountain MFP (currently 213 AUMs). Use would not occur in the Little Rockies or Flini Trail Allotments, which do not produce livestock forage within the WSA. Access to the 23.6 miles of ways in the WSA would not be affected because they would be in the nondesignated area.

There are no existing livestock developments in this area, nor are any proposed. Surface disturbance of up to 5 acres would not affect livestock use of the area.

In the area that would not be designated, grazing use (currently 844 AUMs including 13 unallocated) would also continue as authorized in the MFP. Surface disturbance of approximately 12,800 acres due to mineral and energy exploration and development could reduce available forage for cattle. If development of this magnitude occurred, as much as 12 percent of the Sewing Machine Allotment's livestock forage would be disturbed and/or destroyed, thus reducing the available AUMs. However, following reclamation, additional forage could be available to livestock. All existing and proposed livestock developments are in this portion of the WSA, and they could be maintained and developed without concern for wilderness values.



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Conclusion: In the short term, the methods and costs of livestock management would not be affected. In the long term, about 12 percent of the livestock forage in one allotment would be lost for the duration of the tar sand activities.

### • Impacts on Visual Resources

In the 32,700-acre portion that would be designated wilderness, the colorful canyon scenery of the North Wash drainage, the Dirty Devil River drainage, and the large mesa called The Block (North and South Block), would be protected because of VRM Class I management, ORV closure, and closure to future mineral leasing and location. Approximately 5 acres of surface disturbance from uranium exploration on existing claims could result in a localized degradation of visual values, but no significant impact in this portion as a whole would be expected because much less than 1 percent of the area would be disturbed.

In the 40,400-acre portion that would not be designated, impacts would be as described for the No Action/No Wilderness Alternative. About 5,700 acres would continue to be managed under VRM Class II standards and 34,700 acres as VRM Class III. In the long term, management class objectives could not be met on 12,800 acres disturbed by tar sand development. Even after rehabilitation, some permanent localized degradation is expected and VRM objectives would probably not be met on the entire area.

Conclusion: Visual resources would be protected in the designated area which is 45 percent of the WSA. VRM objectives would not be met on 12,800 acres in the directly disturbed areas.

### • Impacts on Cultural Resources

Eight recorded sites are located in the designated area. Three of these are Kayenta Anasazi sites located on The Block. The remaining sites consist of rock-shelter and four small lithic scatters. Based on inventory data for the WSA as a whole, potential for finding additional sites is probably high. Only 5 acres of disturbance are expected in the designated area and resulting impacts to cultural resources would probably be negligible.

Approximately 57 acres of disturbance would occur in the nondesignated area in the short term. All 40,400 acres would remain open to mineral location and mineral leasing although not much development is expected. The 32 recorded and an unknown number of

unrecorded archaeological sites in the nondesignated portion would be protected by existing Federal and State antiquities laws and would be subject to appropriate cultural resource management procedures prior to disturbance. However, in the long term, some cultural resources may be inadvertently damaged or lost due to surface disturbance, mainly the eastern portion of the WSA.

Conclusion: Forty-five percent of the WSA, including eight recorded sites, would receive protection as a result of wilderness designation with this alternative. The remainder of the WSA, including 32 recorded sites, would be adversely affected by tar sand development and possibly ORV use. Intentional vandalism and artifact collection may increase.

### • Impacts on Recreation

Recreation use would increase between 2 and 7 percent per year in the foreseeable future as previously described. Impacts on recreational values and opportunities for the 32,700-acre area that would be designated would be as described in the All Wilderness Alternative. Outstanding primitive recreational activities would be recognized, managed, and preserved on 45 percent of the WSA. The wild and scenic qualities of 4 miles of the Dirty Devil River would receive additional protection as compared to the No Action/No Wilderness Alternative. The BLM wilderness would provide access to the adjacent NPS-proposed wilderness.

In the area that would not be designated (40,400 acres), little change in the type of recreational use is expected. Over the long term, tar sand development activities on up to 12,800 acres would degrade or destroy primitive recreational values in the affected areas and possibly in the area as a whole in that portion of the WSA. Vehicular use would be allowed on the 23.6 miles of vehicular ways and roads in the non-designated portion of the WSA, and new access could be developed. This would maintain and possibly improve access into the area that could be used for non-primitive recreational purposes. Recreation use would continue to increase.

Conclusion: Primitive recreation opportunities would be preserved on 45 percent (32,700 acres) of the WSA that would be designated. Approximately 23.6 miles of way would remain open for vehicular use on the remaining 55 percent (40,400 acres) of the WSA and the quality of opportunities for primitive recreation would be reduced.



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### • Impacts on Economic Conditions

Overall, with partial designation there would not be significant changes in current trends of population, employment, and local income distribution in the short term.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10), as well as loss of potential increases in population, income, and Federal revenues that could occur with the No Action/No Wilderness Alternative.

Potential beneficial and adverse effects of water developments on the Dirty Devil River system may not occur.

Tar sand production from the 33,490 acres of the Tar Sand Triangle STSA in the nondesignated portion, as well as the remainder of the STSA outside the WSA, could occur and could create major beneficial and adverse economic impacts in Garfield, Wayne, and possibly Emery Counties. The size and duration of tar sand projects in the region would be reduced by 7,760 acres.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development with the No Action/No Wilderness Alternative. With the exception of uranium, the potential for mineral development is low, and it is estimated that potential locatable mineral-related local income would not be significantly reduced by partial wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Over the short time, livestock use and ranchers' income would continue as at present with a potential of up to 1,057 AUMs of use and \$21,140 of livestock sales, including \$5,285 of ranchers' return to labor and investment. In the long term, tar sand development in the nondesignated portion of the WSA could reduce livestock forage and related sales, and returns could be reduced for several years; however, there is a potential for increased grazing and related sales and returns following reclamation of disturbed areas.

Future increases in recreation-related local expenditures would be small (average of \$4.10 per visitor day) and would be insignificant to both the local economy and individual businesses.

The loss of 7,760 acres now leased would cause an eventual loss of up to \$15,520 per year of lease fees to the Federal Treasury. Not being able to lease could cause a loss of \$49,800 annually in Federal revenues. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

In the short term, Federal grazing fees of \$1,628 per year would continue. In the long term, tar sand development in the nondesignated portion could reduce livestock forage use and related Federal grazing fees.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. One commercial outfitter occasionally uses the WSA.

Conclusion: Economic conditions would not be significantly affected in the short term. In the long term, there would be both beneficial and adverse effects on all economic sectors and infrastructures in Wayne, Garfield, Sevier, and possibly Emery Counties as a result of tar sand development and restrictions on water development in the Dirty Devil River system.

### **Small Partial Wilderness Alternative (27,000 Acres)**

Because the tar sand, uranium, and rangeland improvement activities projected for the No Action/No Wilderness Alternative would also occur with this alternative, most resources would be affected only to a lesser extent than with the No Action/No Wilderness Alternative.

### • Impacts on Wilderness Values

Wilderness designation of 27,000 acres would contribute to preservation of the area's wilderness values. Although in both the short term and long term, impacts overall in the WSA would be about the same as identified for the No Action/No wilderness Alternative, this Partial Wilderness Alternative would actually reduce the potential for surface-disturbing activities that could impair wilderness values over the long term in the designated area. Wilderness values would be preserved over the long term in the designated area. Protection in the designated area would



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include management under VRM Class I which generally allows for only natural ecological change, ORV closure although none of the 23.6 miles of ways are in this area, and closure to future mineral leasing and location. Naturalness (27,000 acres), outstanding opportunities for solitude (25,600 acres), and outstanding opportunities for primitive recreation (27,000 acres) would be preserved as would many special features. This area includes the highest quality scenic areas in the WSA. It is not known to what extent cultural values endangered or sensitive plants and animals are included in the designated area. Desert bighorn sheep would be protected in the designated area but they range throughout the WSA. The 4 miles of the Dirty Devil River in the WSA would be within the designated wilderness and would be protected.

In the short term, direct loss of naturalness and opportunities for solitude and primitive recreation due to surface disturbance from uranium exploration and from rangeland projects would directly occur on up to 62 acres within the nondesignated portion. Indirect reductions in wilderness values would occur on up to 1,462 acres. Special features would be largely unaffected because the direct disturbance would involve only 0.08 percent of the WSA and in addition appropriate measures would be taken to protect special status species and cultural values prior to any surface-disturbing activity. Refer to the Cultural Resources and Vegetation and Wildlife Including Special Status Species sections.

In the 46,100-acre area that would not be designated, there could be up to 15,100 acres (21 percent of the WSA) of surface disturbance from tar sand development over the long term. Tar sand development would eliminate naturalness (37,309 acres meet the standard) and opportunities for solitude and primitive recreation on the directly disturbed areas. Opportunities for solitude are less than outstanding in this portion of the WSA. About 5,700 acres in The Block have outstanding opportunities for primitive recreation. Sights, sounds, and emissions of tar sand activities in the 46,100-acre area that would not be designated would result in an indirect loss in quality of solitude, primitive recreation, and scenic values, not only throughout the nondesignated area but also within the designated portion of the WSA; within the Dirty Devil, Horseshoe Canyon (South), and French Spring-Happy Canyon WSAs; in the NPS-proposed wilderness in the Glen Canyon NRA; and possibly within the Canyonlands National Park.

Elimination of ORV use in the designated area would benefit opportunities for solitude and primitive recreation in that portion of the WSA although vehicular use of 23.6 miles of ways and future mineral exploration and development roads in the nondesignated area would continue to detract from these opportunities during the period of activity.

This alternative would complement the NPS proposal for wilderness management of the Glen Canyon NRA because the portion of the WSA contiguous with the NRA would be designated.

Conclusion: Wilderness values would be preserved overall in the designated area which is approximately 37 percent of the WSA. In the short term, naturalness and opportunities for solitude and primitive recreation would be directly lost on 62 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to 1,462 acres more. Over the long term, tar sand development would result in the direct loss of wilderness values including naturalness, opportunities for solitude and primitive recreation, and special features on 15,100 acres of the WSA in the nondesignated portion, and would indirectly reduce in quality scenic values and opportunities for solitude and primitive recreation throughout the WSA, as well as adjacent BLM WSAs and NPS-proposed wilderness in the Glen Canyon NRA and possibly in the Canyonlands National Park. The Dirty Devil River would be protected.

### • Impacts on Air Quality

Activities such as tar sand development, uranium development, and rangeland improvement constraint would disturb the soil and cause dust which would reduce visibility.

Conclusion: Over the short term, air quality would not be reduced by activities in the WSA. Without new technology for extraction of oil from tar sand, air quality could be reduced and with variances could exceed PSD Class I limitations in the Canyonlands National Park.

### • Impacts on Geology and Topography

Mining operations would destroy geologic formations and change the landscape in the nondesignated area as described for the No Action/No Wilderness Alternative.



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Conclusion: Geologic and topographic features would be altered in the long term on 21 percent (15,100 acres) of the WSA, all in the nondesignated area.

- Impacts on Soils

Soils would be disturbed by mining operations, road building, and other activities in the nondesignated area.

Conclusion: Increases in soil erosion would be significant (44 percent) on a localized basis. Discharges into the Dirty Devil River would not be significant.

- Impacts on Vegetation Including Special Status Species

With this alternative, vegetation would be protected on the 27,000 acres that would be designated wilderness. In the area that would not be designated, less than 1 percent (62 acres) of the vegetation would be destroyed or altered. Long-term impacts would be as described for the No Action/No Wilderness Alternative.

Conclusion: Over the long term, vegetation types and individual special status plant species would be altered or destroyed.

- Impacts on Water Resources

Surface water quality would benefit because of the reduced likelihood for surface disturbance, as described in the All Wilderness Alternative. However, in the long term, extensive tar sand development in the area that would not be designated wilderness would affect water quality and quantity as described for the No Action/No Wilderness Alternative. Because the 4 miles of Dirty Devil River in the WSA would be in the designated part, the affects of designation on water uses would be as described for the All Wilderness Alternative.

Conclusion: Water quality would not be affected in the short term. Over the long term, tar sand development could reduce the quality of groundwater and reduce salinity in the Colorado River and compete with other potential existing water uses in the Dirty Devil River system.

Future water diversions and new consumptive uses in the Dirty Devil River system upstream of the WSA in Sevier, Wayne, Garfield, and Emery Counties may be hampered or restricted.

- Impacts on Mineral and Energy Resource Exploration and Production

The majority of known and potential resources are in the area that would not be designated and would remain open to mineral exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be significantly affected.

Conclusion: Implementation of the Small Partial Wilderness Alternative would not adversely affect mineral and energy exploration or production.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Wildlife could benefit from this alternative due to the preservation of solitude and naturalness on 27,000 acres that would be designated wilderness.

In the eastern part of the WSA, impacts on wildlife habitat and populations would be essentially the same as described for the No Action/No Wilderness Alternative.

Conclusion: Wildlife habitat and populations would not be significantly affected in the short term. Over the long term, tar sand development would reduce available habitat for special status and most other species, including Desert bighorn sheep in the eastern portion of the WSA. Populations of some species would be reduced but reclamation would improve habitat for others.

- Impacts on Livestock Management

In the area that would be designated wilderness, livestock grazing would continue as authorized in the Henry Mountain MFP (currently 74 AUMs). Use would not occur in the Little Rockies and Flint Trail Allotments, which are not currently in use (unallocated) and do not produce livestock forage within the WSA. There are no existing livestock developments in this area nor are any proposed. Surface disturbance of up to 17 acres in this area would not affect livestock use of the area.

In the area that would not be designated, grazing use (currently 983 AUMs including 13 unallocated AUMs) would also continue as authorized in the MFP. Long-term impacts would be as described for the No Action/No Wilderness Alternative.



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Conclusion: In the short term, the Small Partial Wilderness Alternative would not affect livestock management. In the long term, available livestock forage would be reduced by 12 percent for the duration of tar sand development activities.

## • Impacts on Visual Resources

In the 27,000-acre portion that would be designated wilderness, the colorful canyon scenery of the North Wash drainage and the Dirty Devil River drainage would be protected because of VRM Class I management, ORV closure, and closure to future mineral leasing and location. No disturbance of this area is anticipated following designation.

In the 46,100-acre portion that would not be designated, 5,700 acres would continue to be managed under VRM Class II standards and 40,400 acres as VRM Class III. Management class objectives could not be met on 15,100 acres of tar sand development disturbance. Impacts would be the same as with the No Action/No Wilderness Alternative.

Conclusion: Visual resources would be protected in the designated area which is 37 percent (27,000 acres) of the WSA. Objectives would not be met on disturbed areas.

## • Impacts on Cultural Resources

Only three recorded sites, a rockshelter and two small lithic scatters, would receive protection from wilderness designation under this alternative. Based on existing inventory data, potential for finding additional sites is probably high. No disturbance would occur in the designated portion and impacts on cultural resources are not expected.

In the short term, an estimated 62 acres of disturbance would occur in the nondesignated portion. The entire 46,100 acres would remain open to mineral location and mineral leasing and sale. All recorded and unrecorded sites would be protected by existing Federal and State antiquities laws and would be subject to appropriate cultural resource management procedure prior to disturbance. However, some cultural resources may be inadvertently damaged or lost due to surface disturbance. Impacts in the nondesignated area would be similar to those described for the No Action/No Wilderness Alternative.

Conclusion: Thirty-seven percent of the WSA including three recorded sites would receive protection as

a result of wilderness designation under this alternative. In the long term, sites in the eastern portion of the WSA would be adversely affected by tar sand development and possibly ORV use. Intentional vandalism and artifact collection may increase.

## • Impacts on Recreational Use

Recreation use would increase between 2 and 7 percent per year in the foreseeable future. Impacts on recreational values and opportunities for the 27,000-acre area that would be designated (37 percent of the WSA) would be as described in the All Wilderness Alternative. Outstanding primitive recreational activities would be recognized, managed, and preserved. The wild and scenic qualities of 4 miles of the Dirty Devil River would receive additional protection as compared to the No Action/No Wilderness Alternative. The BLM wilderness would provide access to the adjacent NPS-proposed wilderness.

In the area that would not be designated (46,100 acres), little change in type of recreational use is expected. Mineral and energy exploration and development activities on up to 15,100 acres would degrade or destroy primitive recreational values in the affected areas and possibly in the nondesignated area as a whole. Vehicular use would be allowed on the 23.6 miles of vehicular ways and roads in the nondesignated portion of the WSA and new access could be developed. Such use would maintain and possibly improve access into the area that could be used for nonprimitive recreational purposes.

Conclusion: Primitive recreation opportunities would be protected on 37 percent (27,000 acres) of the WSA. Approximately 23.6 miles of way would remain open for vehicular use on the remaining 63 percent (56,000 acres) of the WSA and the quality of opportunities for primitive recreation would be reduced.

## • Impacts on Economic Conditions

Effects would be similar to those of the No Action/No Wilderness Alternative. Overall, there would not be significant changes in current trends of population, employment, and local income distribution in the short term.

Because of restrictions placed on the use of resources under partial wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10), as well as loss of potential



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increases in population, income, and Federal revenues that could occur with the No Action/No Wilderness Alternative.

Potential beneficial and adverse effects of water development in the Dirty Devil River system may not occur.

Development of the Tar Sand Triangle STSA would not be affected because only about 40 acres of the STSA under lease conversion application would be in the designated area. Tar sand production from the remainder of the STSA in the nondesignated portion would occur in the long term and result in major beneficial and adverse socioeconomic impacts in the Garfield, Wayne, and possibly Emery Counties.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development with the No Action/No Wilderness Alternative. With the exception of uranium, the potential for mineral development is low and it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims on the 27,000-acre wilderness would be lost.

Over the short term, livestock use and ranchers' income would continue as at present with a potential of up to 1,057 AUMs of use, \$21,140 of livestock sales, including \$5,285 of ranchers' return to labor and investment. In the long term, tar sand development in the nondesignated portion of the WSA could reduce livestock forage and related sales and returns for several years; however, there is a potential for increased grazing and related sales and returns following reclamation of disturbed areas.

Future increase in recreation-related local expenditures would be small (average of \$4.10 per visitor day) and would be insignificant to both the local economy and individual businesses.

The loss of 40 acres now leased would cause an eventual loss of only \$80 per year of lease fees to the Federal Treasury. Potentially \$53,920 in Federal revenues would be lost from the 26,960 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

In the short term, Federal grazing fees of \$1,628 per year would continue. In the long term, tar sand development in the nondesignated portion could reduce livestock forage use and related Federal grazing fees. These losses could be restored over time.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. One commercial outfitter occasionally uses the WSA.

Conclusion: Economic conditions would not be significantly affected in the short term. In the long term, there would be both beneficial and adverse effects on all economic sectors and infrastructures in Wayne, Garfield, Sevier, and possibly Emery Counties as a result of tar sand development and restrictions on water development in the Dirty Devil River system.



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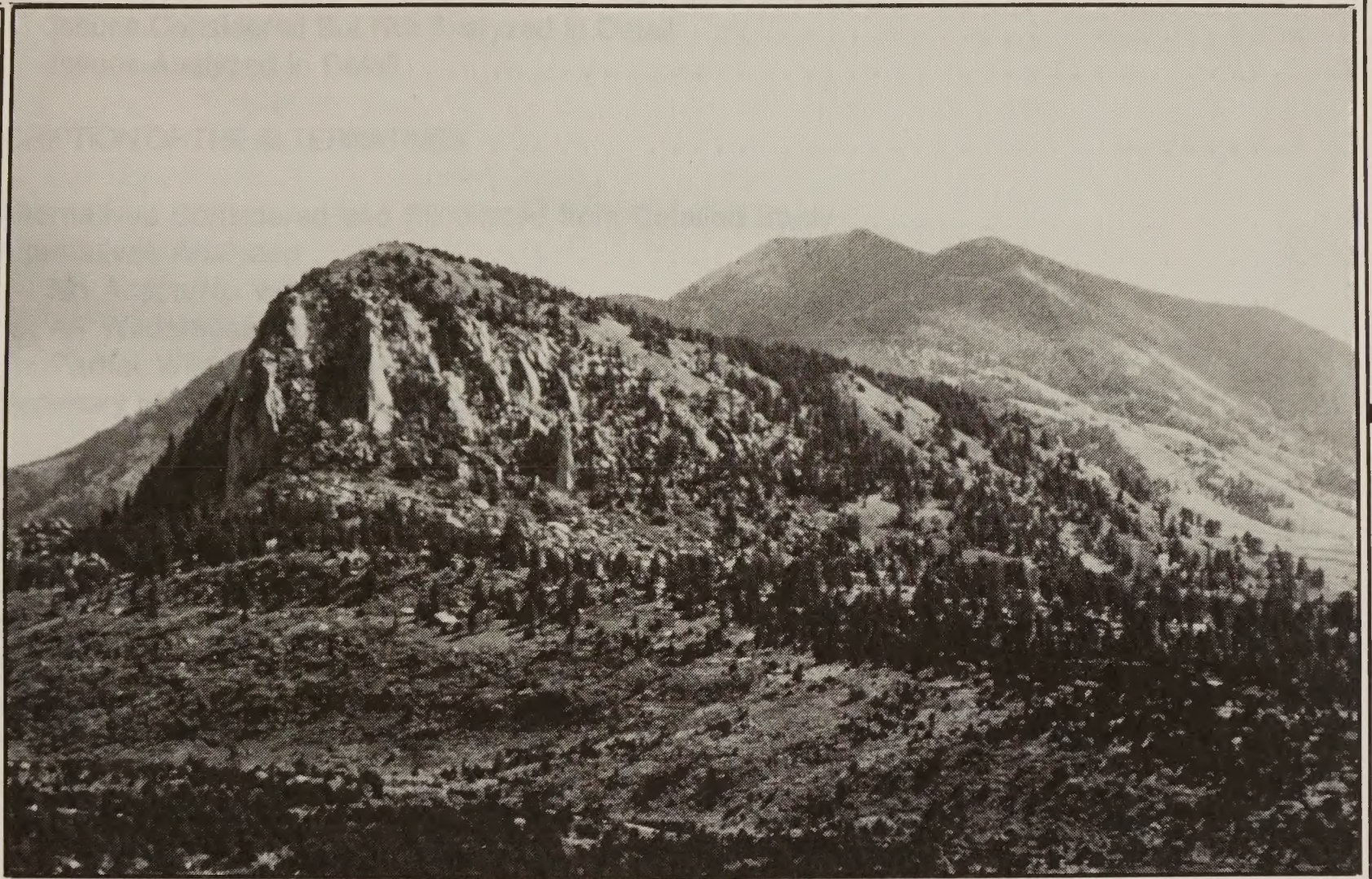








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## INTRODUCTION

### General Description of the Area

The Mt. Pennell WSA consists of 74,300 acres of public land in eastern Garfield County. A portion of the WSA is contiguous to the NPS-proposed wilderness within Capitol Reef National Park. The Henry Mountains structural basin is one of the major structural depressions of the Colorado Plateau. Mt. Pennell forms a high structural dome 6 to 8 miles in diameter, with several thousand feet of structural relief that interrupts the otherwise gentle east flank of the structural basin. Mt. Pennell is the second highest peak in the Henry Mountains. There are several deep canyons carved into the side of the mountain, including Dark and Scratch Canyons.

Annual precipitation varies from about 7 inches to 23 inches at the top of Mt. Pennell which is 11,371 feet above sea level. Temperatures range from -20 degrees Fahrenheit (F) to over 110 degrees F.

Most of the WSA at the lower elevations is characterized by pinyon-juniper woodland and associated grasses. Above 7,000 feet, oak, Ponderosa pine, subalpine fir, spruce, Douglas fir, and aspen are found. Wildlife found in the WSA includes the Henry Mountain bison herd, mule deer, rabbits, squirrels, cougar, coyotes, and several species of birds.

There are known deposits of gold, copper, and silver that are currently not economical to develop due to their limited extent and quality. Approximately 12.3 million tons of strippable coal on 1,270 acres are found on Cave Flat (2 to 4 percent of the Henry Mountain coal field). However, BLM has found the entire acreage to be unsuitable for surface mining because of the presence of crucial bison habitat.

The WSA is approximately 16 miles wide at its widest point (east to west) and 17 miles long at its longest point. It is located about 25 miles south of Hanksville in southeastern Utah.

A portion of the WSA's western boundary borders Capitol Reef National Park for approximately 11 miles. One small boundary segment in the northeast portion of the WSA is adjacent to the Mt. Hillers WSA. The two WSAs are separated by the Stanton Pass Road.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. The BLM Proposed Action in the Draft EIS was the No Action/No Wilderness Alternative. The BLM Proposed Action for the Final EIS is the Partial Wilderness Alternative (25,800 acres). Refer to Appendix 11 in Volume I for a summary of the rationale for the Proposed Action.

2. The anticipated surface disturbance presented in the Draft EIS (1,393 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 1,393 acres reported in the Draft EIS to 1,267 acres of surface disturbance for the Final EIS.

3. Two travel routes identified as cherry-stemmed roads in the Draft EIS, were determined to be ways, and are not shown on the Final EIS maps. This change results in an increase of about 5 miles of ways in the WSA.

### Specific Issues Identified Through Scoping and Public Comment

- Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies, and impacts on water rights), the following

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issues or impacts specific to the Mt. Pennell WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Air Quality: The public has expressed concern that wilderness designation could lead to redesignation of WSAs from the existing Class II PSD classification, to the more stringent Class I rating. A PSD Class I area could restrict future industrial developments in the Mt. Pennell WSA. Since the BLM Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not cause the air quality classification to change. The decision to change air quality classification is the prerogative of the State of Utah, rather than BLM. In addition, the anticipated developments in the Mt. Pennell WSA are small and would meet the constraints of Class II PSD guidelines. Therefore, the impact of wilderness designation on air quality is not analyzed in detail for the Mt. Pennell WSA.

2. Geology and Topography: Mt. Pennell is a prime example of laccoliths which were injected into overlying sedimentary rocks. The public has expressed concern that only wilderness designation can adequately protect these features. The only potential threats to these features would be blasting and surface disturbance on a scale much larger than any projects anticipated for the WSA. Therefore, impacts on geologic features are not significant issues for the Mt. Pennell WSA.

3. Water Resources: The WSA is headwaters to several drainages and includes 10.5 miles of perennial streams. The public is concerned that wilderness designation would interfere with development of existing water rights and would establish Federal reserved water rights that would conflict with future filings. The Mt. Pennell WSA is a headwater area and protection of wilderness values would not affect any upstream uses. Therefore, the impact on water uses outside the WSA is not an issue. Potential impacts on water development inside the WSA are analyzed in the livestock section. Therefore, impacts on water resources are not significant issues for the Mt. Pennell WSA.

4. Forest Resources: The WSA contains 25,856 acres of forest resources (24,563 acres pinyon-juniper woodland and 1,293 acres of aspen, fir, and pine). The Henry Mountain MFP closes the area to harvest of the timber resource. There is little or no history

or expected demand for use of the pinyon-juniper woodland for Christmas trees, posts, or firewood because of steep slopes and low volumes. If a proposed 1,200-acre pinyon-juniper woodland chaining and seeding were to be implemented, it would involve only 4.6 percent of the woodland resource. Therefore, impacts on forest resources are not significant issues for inclusion in the Final EIS.

### • Issues Analyzed in Detail

The significant issues for the Mt. Pennell WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on soils.
3. Impacts on vegetation including special status species.
4. Impacts on mineral and energy exploration and production.
5. Impacts on wildlife habitat and population including special status species.
6. Impacts on livestock management.
7. Impacts on visual resources.
8. Impacts on preservation of cultural resources.
9. Impacts on the recreational use of the WSA.
10. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of wilderness values, bison management, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 42, for responses to specific comments about the Mt. Pennell WSA.



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## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add up to 68,825 acres Federal and State lands mainly on the northern and southern sides of the WSA were suggested in the public comments. These alternatives were not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (74,300 acres); and (3) Partial Wilderness (Proposed Action) (25,800 Acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume IV are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 74,300-acre Mt. Pennell WSA would be designated by Congress as part of the NWPS. BLM's land use plans are regularly updated and it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c).

There are nine sections of State land (5,656.5 acres) within the WSA (refer to Map 1). There are no private or split-estate lands within the WSA. The figures and acreages given with this alternative are for Federal lands only.

#### • Management Conditions and Constraints

All 74,300 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on 227 existing mining claims (4,540 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) without concern for wilderness values. No oil and gas leases are presently lo-

cated in the WSA. Future oil and gas leases could be developed under leasing Category 1 (standard stipulations) on 49,400 acres and Category 2 (standard and special stipulations) on 24,900 acres. Although oil and gas resources would be managed as described above, no oil and gas exploration or development are projected for the WSA because the level of known resources and the probability of development are too low to support a development assumption. See Appendix 6 in Volume I for a discussion of mineral and energy resource exploration and development projections. Surface mining of coal deposits in the Cave Flat area would be prohibited to protect crucial bison habitat.

The present domestic livestock grazing use in the WSA would continue as authorized in the MFP (currently estimated to be 3,282 AUMs). Existing developments (including a corral, seven reservoirs, 4 miles of fence, 6 miles of pipeline, two wells, and two enclosures for rangeland monitoring purpose) could be used and maintained, and new range developments (including an identified potential 1,200-acre chaining, two spring developments, and one livestock reservoir) would be allowed without wilderness considerations.

Public water reserve withdrawals would continue on 884 acres, segregating those lands from all public land laws and nonmetalliferous mineral locations.

The entire WSA acreage, including about 22 miles of vehicular ways and 29 miles of road, would be open to ORV use.

The entire 74,300-acre area would be open to woodland product harvest.

The area would continue to be managed under VRM Class II on 23,885 acres, Class III on 20,951 acres, and Class IV on 29,464 acres.

#### • Action Scenario

Given the management plans described above and the resources described in the Affected Environment, BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 1,267 acres of surface disturbance in the foreseeable future.



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About 1,200 acres of the projected disturbance would result from a planned vegetation treatment in the area surrounding Scratch Canyon. The treatment would be a pinyon-juniper woodland chaining and seeding to improve livestock forage and habitat for the resident bison herd. An additional 2 acres would be disturbed due to the construction of two spring developments and one reservoir.

Approximately 57 acres of disturbance would result from locatable minerals (gold, silver, and copper) exploration and development including up to 15 miles of access roads. These minerals are known to occur in the Mt. Pennell WSA. Existing placer mining claims are located along the drainages on the eastern edge of the WSA. Activities would involve moving alluvial deposits in the drainages to recover the gold. Based on mining activities typical of the area, it is projected that 48 employees and 120 days would be used in exploration activities in the foreseeable future. Development would create up to 10 jobs during the spring and early summer each year when surface water could be used for mining operations. Mining activities would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. Disturbed areas would be reclaimed following abandonment. Three to 5 years would be necessary to determine successful reclamation. Eight acres would be disturbed due to access road construction (4 miles) to a State section in the WSA (T. 33 S., R. 10 E., sec. 16) for mineral resources exploration and development purposes.

No disturbance from ORV use is projected due to the ruggedness of the terrain.

Recreational use is expected to increase over the current estimated use of 2,580 visitor days per year at a rate of 2 to 7 percent annually. As much as 25 percent of the use would be associated with vehicular access on 22 miles of existing ways.

- All Wilderness Alternative

With this alternative, all 74,300 acres of the Mt. Pennell WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character.

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, and provisions of the BLM Wilderness Management Guidelines regarding private lands, it is projected that the nine sections (5,656.5 acres) of State lands within the WSA (refer to Map 1 and Appendix 3 in Volume I) would remain under existing ownership. The figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 74,300 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 4,540 acres of 227 existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Oil and gas leases have been phased out and new leases would not be issued. Coal deposits in the Cave Flat area are not currently under lease and development would not be allowed with this alternative. Development of sand and gravel resources in the area would not be allowed.

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 3,282 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments (including one corral, 4 miles of fence, 6 miles of pipeline, seven reservoirs, two wells, and two rangeland enclosures) existing at the time of designation would continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new rangeland developments would be allowed if necessary for the protection or effective management of the rangeland and/or wilderness resource, if these can be carried out consistent with wilderness protection standards (refer to Appendix 1 in Volume I). An identified potential 1,200-acre chaining and one livestock reservoir would probably not be allowed because they may not meet the protection standards. Two proposed spring developments would be developed consistent with wilderness protection criteria.



# MT. PENNELL WSA

R. 8 E.

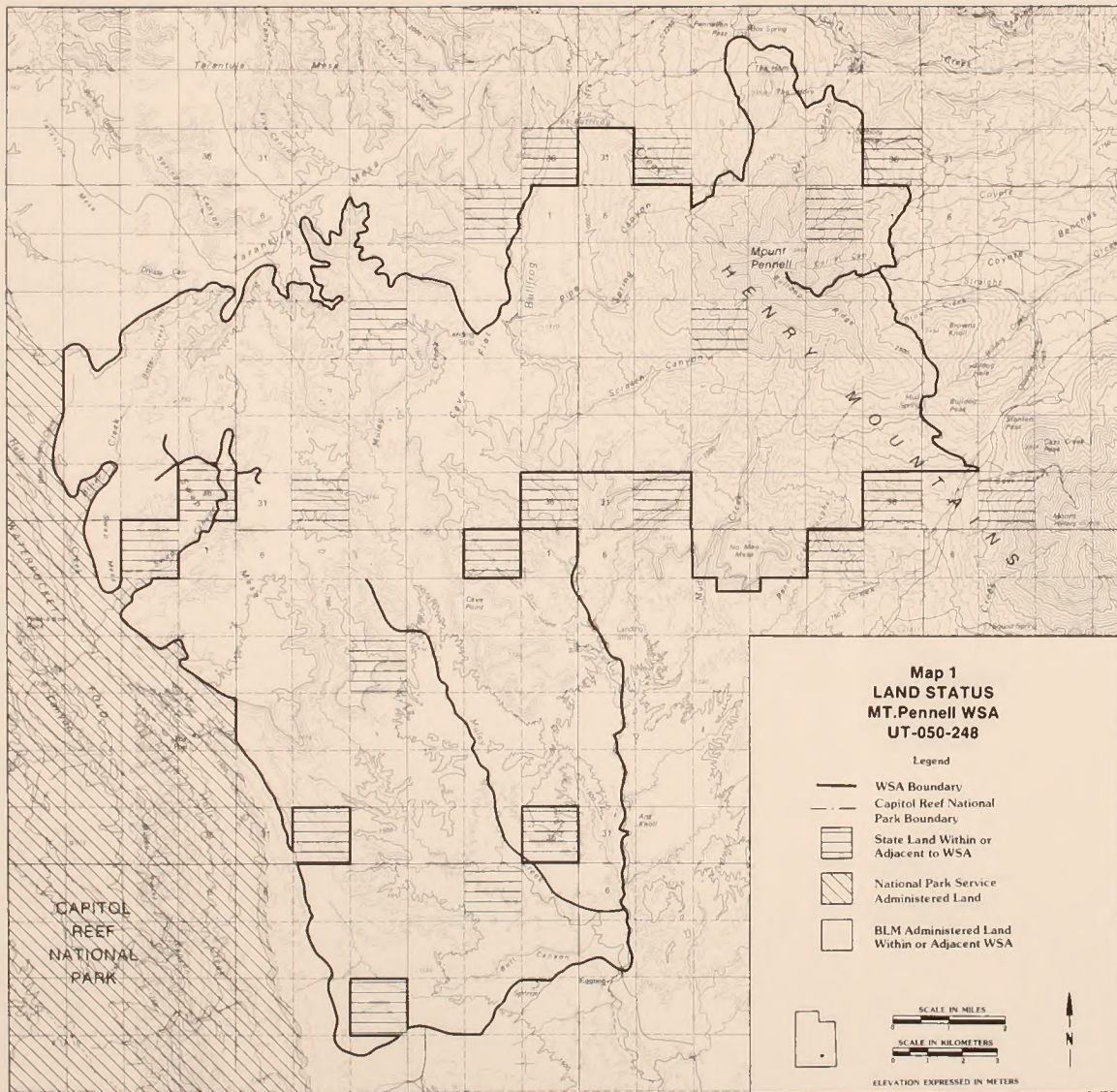
R. 9 E.

R. 10 E.

T. 33 S.

T. 34 S.

T. 35 S.









# MT. PENNELL WSA

R 8 E

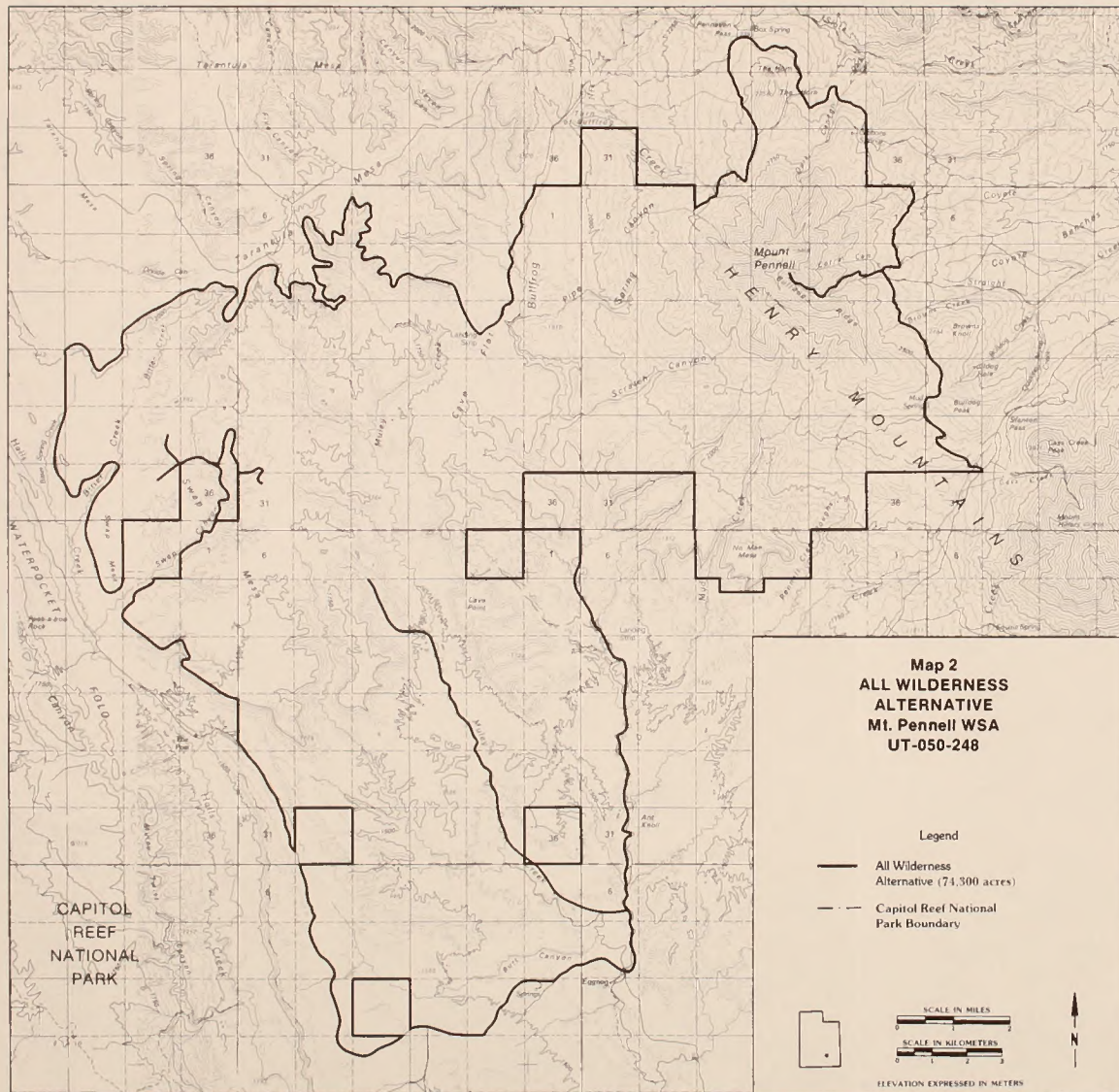
R 9 E

R 10 E

T. 33 S

T. 34 S

T. 35 S









## MT. PENNELL WSA

Public water reserve withdrawals would continue on 884 acres, segregating these lands from all public land laws and nonmetalliferous mineral location.

The entire 74,300-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR 8560; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments. About 22 miles of existing vehicular ways would not be available for vehicular use except as indicated above. The approximately 29 miles of dirt and gravel roads that border the WSA or that are cherry-stemmed into the WSA would remain open to vehicular use.

Visual resources would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.

- Action Scenario

BLM projects that a total of 26 acres of surface disturbance would occur in the WSA following wilderness designation. Seventeen acres of disturbance would result from locatable minerals exploration and development of existing mining claims as discussed in the No Action/No Wilderness Alternative except on a more limited scale including up to 5 miles of access roads. It is projected that 16 employees and 40 days would be used for exploration activities in the foreseeable future. Development would require up to six employees for the spring and summer months when surface water would be used for mining activities. Mining activities would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. No exploration or development of oil and gas resources in the WSA is projected. Implementation of the All Wilderness Alternative would preclude new mineral location and mineral leasing. Therefore, no leasable mineral resource would be developed and locatable mineral development would be restricted to existing claims following wilderness designation. Eight acres of disturbance would result from access road construction (4 miles) to in-held State lands as discussed in the No Action/No Wilderness Alternative.

One acre of surface disturbance would result from the construction of two spring developments. These projects would be designed and in-

stalled consistent with wilderness protection standards. The planned vegetation treatment and reservoir would not be allowed.

No disturbance from ORV use is projected because of wilderness management restrictions and rugged terrain.

Primitive-type recreation is expected to increase over the current estimated primitive use of 1,935 visitor days per year at a rate of 2 to 7 percent annually.

- Partial Wilderness Alternative (Proposed Action) (25,800 Acres)

With this alternative, 25,800 acres of the Mt. Pennell WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness those portions of this WSA that have the best wilderness values. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude, primitive recreation, and special features were included where possible within a manageable boundary. The acreage analyzed as wilderness includes the mountainous portions of the WSA. About 48,500 acres in the western portion of the WSA, which consist of benchlands, would be managed in accordance with the Henry Mountain MFP as described for the No Action/No Wilderness Alternative. The 25,800-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative.

The policy of the State is to reserve its position regarding exchange of in-held lands within any particular WSA. Based on this policy regarding exchange of State lands, it is projected that State lands would remain under existing ownership. There are two State sections (1,277.2 acres) in the portion of the WSA that would be designated wilderness (refer to Map 1 and Appendix 3 in Volume I). The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 25,800-acre wilderness would be withdrawn from mineral entry and closed to new mineral



leasing and sale. However, development work, extraction, and patenting would be allowed to continue on 1,080 acres of 54 existing mining claims, provided that they are valid. Oil and gas leases have been phased out and new leases would not be issued. The 48,500-acre area not designated wilderness would be open to mineral location, leasing, and sale. There are 173 mining claims (3,460 acres) on the 48,500 acres. There are no existing oil and gas leases but future leases could be developed under Category 1 stipulations on 42,260 acres and Category 2 on 6,240 acres. Nevertheless, exploration and development of oil and gas is not expected because the level of known resources and the probability of development is too low to support a development assumption (see Appendix 6 in Volume I). The nondesignated area includes 1,270 acres of surface minable coal in the Cave Flat area that would continue to be unsuitable for surface mining (Henry Mountain MFP [USDI, BLM, 1982c]).

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 891 AUMs in the area designated wilderness would remain available to livestock as presently allotted. In the designated portion, the existing corral, 2 miles of fence, and one reservoir could continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. Rangeland developments would be allowed after designation only if necessary for the protection and effective management of the rangeland and/or wilderness resources, if wilderness protection criteria are met. About 1,153 acres of the 1,200-acres identified for potential chaining would be located within the designated area and would not be allowed. The remaining 47 acres of the potential chaining are in the 48,500-acre nonwilderness area and could be implemented without consideration of wilderness values. Because the acreage of allowable chaining would be small, chaining is unlikely with this alternative. In the 48,500-acre nonwilderness area, grazing use of approximately 2,391 AUMs would also continue as authorized in the MFP.

In the 25,800-acre wilderness area, water resource developments would be allowed if they meet wilderness management criteria. The two spring developments planned in this area would be allowed, but construction of the livestock reservoir would be prohibited.

Public water reserve withdrawals of 884 acres (524 acres in the designated area and 360 acres in the nondesignated area) would continue. The withdrawals segregate these lands from all public land laws and nonmetalliferous mineral location.

The 25,800-acre wilderness area would be closed to ORV use. The 48,500-acre remainder of the unit would remain open to vehicular travel. About 3 miles of existing vehicular ways within the wilderness portion would no longer be available for vehicular use except for purposes identified for the All Wilderness Alternative. Five miles of existing road in the designated portion would be cherry-stemmed and would remain open to vehicular use.

Visual resources in the wilderness would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The 48,500 acres not designated as wilderness would be managed as Class III on 19,036 acres and Class IV on 29,464 acres as currently set forth in the Henry Mountain MFP.

## • Action Scenario

BLM projects that 26 acres of surface disturbance would occur in the designated portion of the WSA as a result of the activities discussed in the All Wilderness Alternative. Seventeen acres would be disturbed due to locatable mineral activity on existing mining claims (up to 5 miles of access roads) and 8 acres of disturbance would result from access road construction (4 miles) to in-held State land and 1 acre would be disturbed due to the development of two springs. The livestock reservoir would not be allowed in the designated area. No exploration is assumed on existing mineral leases in the designated portion. No new mineral leasing or mineral allocation would be allowed following wilderness designation. Therefore, no development of leasable minerals is assumed and locatable mineral development would be restricted to existing mining claims. No additional rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

No surface disturbance is projected for the non-designated portion of the WSA in the foreseeable future. No locatable or leasable mineral resources exploration or development is assumed. No rangeland, wildlife habitat, watershed projects, or



# MT. PENNELL WSA

R 8 E

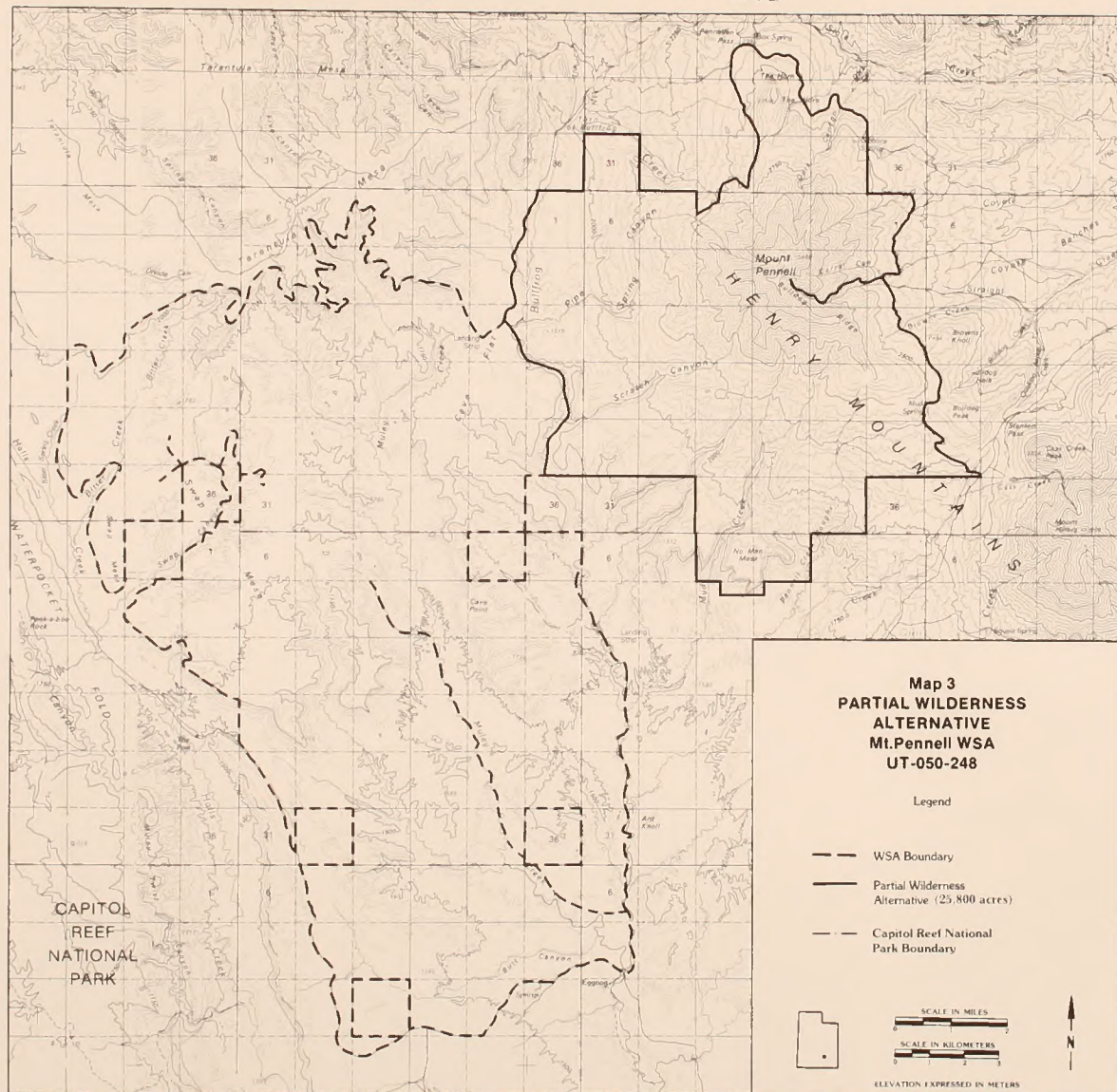
R 9 E

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**Map 3**  
**PARTIAL WILDERNESS**  
**ALTERNATIVE**  
**Mt. Pennell WSA**  
**UT-050-248**

## Legend

- WSA Boundary
- Partial Wilderness Alternative (25,800 acres)
- - - Capitol Reef National Park Boundary



ELEVATION EXPRESSED IN METERS







## MT. PENNELL WSA

other developments are planned in the foreseeable future.

No disturbance from ORV use is projected because of wilderness management restrictions and rugged terrain.

Recreational use is expected to increase over the current estimated use of 2,580 visitor days per year at a rate of 2 to 7 percent annually. About 25 percent of the total visitor days would continue to be associated with vehicular access on 19 miles of existing ways in the nondesignated area.

### Summary of Environmental Consequences

Table 1 presents environmental consequences of alternatives analyzed in detail.

### AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

#### Wilderness Values

- Size

This WSA is 74,300 acres in size and is approximately 16 miles wide at its widest point (east to west) and 17 miles long at its longest point. It is immediately adjacent to the 20,000-acre Mt. Hillers WSA.

- Naturalness

Most of the eastern portion of the Mt. Pennell WSA is in a completely natural condition. There is a 2-mile way on Cave Flat. There are another 3 miles of ways on the south side of Bulldog Ridge that lead to stock watering troughs. In both cases, the intrusions are substantially unnoticeable. Two other signs of human activity are a 1-mile road to a cabin at Hancock Springs and a 4-mile road to a transmitter station on a high ridge south of Mt. Pennell. In both cases, the

roads are cherry-stemmed and are not considered to be in the WSA. Several cabins used for mining claim assessment are found at Straight Creek. This intrusion affects naturalness on about 10 acres of the WSA.

In the western portion of the WSA, intrusions include 17 miles of ways and 24 miles of roads. These roads are cherry-stemmed and are not considered to be in the WSA. Between 1980 and 1983 approximately 5 acres were disturbed as a result of uranium exploration and mining claim assessment work. Four separate projects included drill pads approximately 20 feet by 50 feet with small fluid pits. One project required 2 miles of new road approximately 15 feet wide. The others were accomplished from existing roads and ways. All disturbance has been reclaimed to a substantially unnoticeable condition.

In July 1989 a 13-foot high communication tower with a 4-foot square base was constructed in Trespass about 15 to 20 feet off of the cherry-stemmed road in T. 33 S., R. 10 E., sec. 10. BLM has ordered the tower to be removed and plans to rehabilitate the disturbed area.

Overall, 71,000 acres of the WSA appear natural and 3,300 acres do not meet the naturalness criteria.

- Solitude

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds. The eastern portion of the Mt. Pennell WSA consists of a large central peak with several prominent ridges. Numerous creeks have carved deep canyons in the side of the mountain on all sides such as Straight Creek, Pipe Creek, Scratch Canyon, and Dark Canyon. These features, plus the steep slopes of the mountain proper, contribute significantly to solitude. Vegetation also contributes to solitude. However, there are variations in vegetation due to elevation and aspect. For example, the south slopes have scattered pinyon-juniper woodland, aspen, and scrub oak. The northern and eastern slopes have spruce, pine, fir, and aspen which in many places are quite dense. Finally, from the summit of Mt. Pennell, visitors can experience vistas of hundreds of square miles of desert country with no sign of human activity. In the western portion of the WSA, opportunities for solitude are less than outstanding in the Muley Creek drainage and in the area south of Swap Mesa and Cave Flat because the



# MT. PENNELL WSA

Table 1  
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness	Partial Wilderness (25,800 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 1,267 acres of the WSA because of locatable mineral exploration and development, rangeland development, and construction of access roads to in-held State sections. Opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 7,430 acres. Wildlife would benefit from rangeland developments and water and vegetation treatments. Some Class A scenery would be reduced in quality. Vehicular use of 22 miles of ways and mining-related roads would detract from opportunities for solitude and primitive recreation. This alternative would not complement the NPS proposal for wilderness management in the contiguous Capitol Reef National Park.	Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 26 acres of the WSA because of locatable mineral exploration and development and construction of access roads to in-held State sections, and would be indirectly reduced in quality on an additional 1,486 acres of the WSA. Special features would be protected. Some Class A scenery would be reduced in quality. This alternative would complement the NPS proposal for wilderness management in the contiguous Capitol Reef National Park.
Impacts on Soils	There would be less than a 1-percent increase in soil loss with this alternative as a result of mineral exploration and development.	Erosion and soil loss would remain at present levels because only 26 acres of surface disturbance would occur.
Impacts on Vegetation	The 1,267 acres of projected disturbance would affect less than 1 percent of the WSA and would alter 5 percent of the pinyon-juniper woodland in the WSA. The viability of populations of special status species would be maintained.	Special status species and vegetation types would receive additional protection on 35 percent of the WSA. Impacts on these resources from projected surface disturbance would not be significant because less than 1 percent of the WSA would be disturbed.
Impacts on Mineral and Energy Exploration and Production	This alternative would not adversely affect or further restrict mineral and energy resource exploration and production in the WSA because mineral leasing, location of mining claims, and mineral developments could occur without restriction for protection of wilderness values.	This alternative would limit potential exploration for locatable minerals. The potential for production of small amounts of locatable minerals would be foregone.



# MT. PENNELL WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness	Partial Wilderness (25,800 Acres) (Proposed Action)
Impacts on Wildlife Habitat and Populations	There would be no significant adverse impacts to wildlife habitat or populations. A slight increase in bison forage (40 AUMs) could be achieved. The bison population would increase.	There would be no significant impacts to wildlife populations. Wildlife habitat and populations would receive additional protection and would benefit from solitude on 35 percent of the WSA. A slight increase in bison forage (40 AUMs) would not be possible. The bison population would remain at present levels.
	Livestock management would not be affected and a small increase in use (92 AUMs) would be made.	Current levels of grazing use would not be affected. A small increase in livestock AUMs (92) would be precluded. Operating costs would increase slightly because of restrictions on access to 3 miles of ways and five sheep camps.
Impacts on Visual Resources	Direct loss of visual quality would occur on less than 2 percent (1,267 acres) of the WSA from disturbance and an indirect perceived loss would occur on up to an additional 10 percent (7,430 acres).	Visual quality would be protected on the designated portion which is 35 percent of the WSA. Direct loss of visual quality would occur on less than 1 percent (26 acres) of the WSA from disturbance and an indirect perceived loss would occur on up to an additional 2 percent (1,486 acres).
Impacts on Visual Resources	Direct loss of visual quality would occur on less than 2 percent (1,267 acres) of the WSA from disturbance and an indirect perceived loss would occur on up to an additional 10 percent (7,430 acres).	Visual quality would be protected on the designated portion which is 35 percent of the WSA. Direct loss of visual quality would occur on less than 1 percent (26 acres) of the WSA from disturbance and an indirect perceived loss would occur on up to an additional 2 percent (1,486 acres).



# MT. PENNELL WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives		
Resource	No Action/No Wilderness	Partial Wilderness (25,800 Acres) (Proposed Action)
Impacts on Cultural Resources	Inadvertent loss or damage to archaeological sites may occur due to mineral exploration, surface development, and/or continued ORV use. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resource sites could be managed without restrictions for protection of other wilderness values.	Over the long term, protection from most surface disturbance would probably outweigh increased potential for vandalism. Closure of all vehicular access would protect sites from damage and decrease accessibility in the unit.
Impacts on Recreation	The quality of primitive recreation opportunities would be reduced by mineral exploration, chaining and seeding, and continued use of 22 miles of ways. Both primitive and motorized recreational use would increase.	Thirty-five percent of the WSA including six recorded sites would receive protection as a result of wilderness designation under this alternative. Over the long term, protection from most surface disturbance would probably outweigh increased potential for vandalism associated with increased visitation. The nondesignated area, including 46 recorded sites, would continue to be protected under existing laws. In this area, intentional vandalism and artifact collection may increase due to increased activity and accessibility.
Impacts on Economic Conditions	Present economic conditions would not be affected. Mineral activity in the foreseeable future could result in an increase of 48 jobs or a 2.4-percent increase in employment for Garfield County or a 6-percent increase in Wayne County.	Primitive recreational opportunities would be preserved in the 25,800-acre designated area. Primitive recreation values could be reduced in quality on the 48,000-acre nondesignated area through continued vehicular use of 19 miles of ways. Most of the WSA would be available for motorized hunting. Both primitive and motorized recreational use would increase.
	Wilderness designation would result in temporary impacts on local economic conditions through a reduction of 32 jobs in the locatable mineral industry that would be possible with the No Action/No Wilderness Alternative. Otherwise, economic conditions would not be significantly affected.	This alternative would result in temporary impacts on local economic conditions through a reduction of 32 jobs in the locatable mineral industry that would be possible with the No Action/No Wilderness Alternative. Otherwise, economic conditions would not be significantly affected.



## MT. PENNELL WSA

terrain is relatively flat and the vegetation is too sparse to provide screening. There is adequate topographic and vegetation screening in the Swap Mesa and Cave Flat areas but the presence of numerous roads and ways detracts from the opportunities for solitude.

Overall, these factors considered together indicate that there are outstanding opportunities for solitude on 17,800 acres in the eastern portion of the WSA. Opportunities are less than outstanding on 56,500 acres in the western portion of the WSA. There are no sights and sounds outside the WSA that adversely affect solitude on the WSA.

### • Primitive and Unconfined Recreation

About 17,800 acres of the WSA have outstanding opportunities for primitive and unconfined recreation. The remaining 56,500 acres do not have outstanding opportunities.

Opportunities for primitive, unconfined recreation were evaluated by considering the miles of potential hiking routes in relation to the WSA's size, the number of recreational opportunities present, and the quality of these opportunities. This WSA was determined to have above-average opportunities for such activities as hiking, photography, rock climbing, and geological sightseeing. These activities are further noted in the Recreation section. The overall quality of the opportunities for primitive, unconfined recreation is high east of Bullfrog Creek. On Cave Flat and portions of the WSA west of Cave Flat, primitive recreation opportunities are less than outstanding. Primitive recreation opportunities in the WSA enhance those opportunities found within contiguous Capitol Reef National Park. The NPS has recommended that a portion of the Capitol Reef National Park adjacent to the Mt. Pennell WSA be designated as wilderness.

### • Special Features

This WSA has several special features of interest.

Since Mt. Pennell is the second highest peak in the Henry Mountains, outstanding scenic vistas (as far as Colorado and Arizona) are possible from the summit. Furthermore, the 1-mile change in elevation from base to summit allows for the presence of four distinct biological life zones.

Portions of the WSA serve as summer range for the Henry Mountain bison herd. Bison are frequently seen

in the vicinity of The Horn. Views south from Swap Mesa, Cave Flat, and Cave Point are exceptional.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. Two animal species, bald eagle and peregrine falcon, and one plant species (*Sclerocactus wrightiae*) listed as endangered or threatened may occur in the WSA. In addition, five other special status animal species and four special status plant species may also occur in the WSA. The WSA has populations of cougar which are wildlife species associated with wilderness. Approximately 32 percent (23,885 acres) of the WSA is rated Class A for scenic quality. The WSA has several known cultural sites which are potentially eligible for listing on the National Register of Historic Places. It has approximately 10.5 miles of perennial streams.

### • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of saltbush-greasewood, juniper-pinyon woodland, Arizona pine forest, spruce, fir, and Douglas fir. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

The WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah, and Provo-Orem, Utah.

### Air Quality

This WSA is located in a PSD Class II area under the provisions of the Clean Air Act as amended; however, it is affected little from sources of pollution. Capitol Reef National Park along the west boundary of the WSA is a Class I area. Visibility is generally excellent. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979).

### Geology and Topography

The Mt. Pennell WSA is located in the Colorado Plateau Physiographic Province. In general, this province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments.



## MT. PENNELL WSA

The study area is located in and adjacent to the Henry Mountains, on the eastern flank of the Henry Basin.

The Henry Mountains were formed when mid-Tertiary diorite porphyry stocks and laccoliths were injected into the overlying sedimentary rocks, which range in age from Permian to Upper Cretaceous (Hunt, 1953). The Henry Mountains are generally considered by geologists to be a prime example for the study of laccoliths. Mt. Pennell is a major intrusive center (structural dome) within the WSA, and is bordered by an irregular zone of shattered rock. Several thousand feet of sedimentary rocks, ranging in age from Late Triassic to Late Cretaceous, were domed and faulted during emplacement. Surface exposures in the WSA consist of diorite porphyrys and steeply-dipping sedimentary rocks of the Mancos Shale and Dakota Sandstone (Upper Cretaceous).

The topography of the WSA is characterized by sharp, rugged mountain peaks with steep slopes broken by surrounding narrow canyons. The mountain rises approximately 5,000 feet above the surrounding plateau, reaching an elevation of 11,371 feet. Mt. Pennell is the second highest peak in the Henry Mountains.

### Soils

The general soils of this WSA include high mountain stony loams with no existing accelerated erosion problems and gravelly foothill soils with some critical erosion condition. Table 2 summarizes soil erosion condition for the WSA. Erosion condition was determined by soil surface factors (terms are defined in the Glossary).

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	8,339	11	22,515
Moderate	1.3	41,253	55	53,628
Slight	0.6	17,512	24	10,507
Stable	0.3	5,796	8	1,739
Unclassified		1,400	2	Unknown
Total		74,300	100	Exceeds 88,389

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

According to an unpublished soil survey conducted by the Soil Conservation Service in 1982, the average annual salt production from all undisturbed soils with-

in the WSA is 181 lb per acre and is rated low to moderate. Generally salt production from soils in the vicinity of Mt. Pennell are low while salt production from sediments in the western two-thirds of the WSA is moderate to high.

Rehabilitation potentials over much of the WSA are low because of shallow soils, rock outcrops, and steep slopes. However, there are some moderately deep soils, particularly around the base of Mt. Pennell, which are suited to seeding.

### Vegetation Including Special Status Species

The lower elevations of the WSA are characterized by pinyon-juniper woodland and associated grasses. Above 7,000 feet on the mountain proper, oak, pine, spruce, subalpine fir, Douglas fir, and aspen are found. This combination of plant communities presents a complete elevational gradient for the region. Existing vegetation types are summarized in Table 3.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	24,563	33
Shadscale	26,857	36
Oakbrush	2,529	3
Barren (rock outcrop, badlands)	4,782	7
Coniferous forest/aspen	1,293	2
Grasses, shrubs	8,128	11
Blackbrush, Ephedra	6,110	8
Riparian	38	Less than 1
Total	74,300	100

Source: USDI, BLM, 1983b.

Sclerocactus wrightiae, an endangered plant species, is known to exist in the WSA. One Category 1 and three Category 2 candidate species may occur in the WSA. These are Pediocactus winkleri (which may be proposed for listing in the near future by FWS), Astragalus harrisonii, Erigeron cronquistii, and Spiranthes diluvialis (see Appendix 4 in Volume I).

The Mt. Pennell WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNW types of the WSA are listed on Table 4.



# MT. PENNELL WSA

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Saltbush-greasewood	20,000	27
Juniper-Pinyon woodland	46,000	62
Arizona pine forest	6,300	8
Spruce, fir, Douglas fir	<u>2,000</u>	<u>3</u>
Total	74,300	100

Source: USDI, USGS, 1978.

## Water Resources

The Mt. Pennell WSA is within the Dirty Devil River subbasin on the Upper Colorado River hydrologic sub-region. There are two main drainages within the WSA. The east side of the WSA drains into the Dirty Devil River which in turn flows into Lake Powell. The west side of the WSA drains into Bull Frog Creek which also flows into Lake Powell.

This WSA is within Water Rights Adjudication Area 95. The 95 area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of a 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit. Temporary and fixed time applications over 0.015 cfs on the Dirty Devil River could be considered (UDNRE, DWR, 1988). BLM's water right claims are listed in Table 5.

This area is the headwaters for numerous small streams, such as Coyote Creek. Summer thunderstorms are frequent and can produce flash flooding. There are two wells, 16 springs, seven livestock reservoirs, and 10.5 miles of perennial streams in the WSA.

The water quality standard for the Dirty Devil River and tributaries, from Lake Powell to Fremont River, is Class 3C (protected for nongame fish and other aquatic life). The streams originating in the upper elevations of Mt. Pennell have not been classified by the State. However, BLM is managing them for the uses required of them which is for livestock and wildlife watering or Class 4.

Utah's 1986 305(b) Water Quality Assessment Report states streams and tributaries entering Lake Powell in the southern portions of the Upper Colorado River drainage have impairments to their beneficial uses from high levels of TDS and sodium. These impair-

ments result mainly from natural sources and low flows.

Table 5  
Water Resource Quality Data

Perennial Streams	BLMWUC <sup>a</sup> Number	Flow in CFS <sup>b</sup> (Claimed by BLM)	Length (Miles)	Water Quality-Chemical Parameters
Bullfrog Creek	97-817-935	4.0	0.25	Problem
Dark Canyon Creek	95-3297	(0.06)	3.0	OK
Browns Creek	97-3280	0.16(0.045)	0.25	No data
Mud Creek	97-236-237	0.13	4.50	No data
Straight Creek	97-3283	1.96 (0.44)	2.50	OK
<b>Springs</b>				
Browns Hole	95-3282	0.08 (0.02)		No data
Horn	95-3300	(0.00025)		No data
Gibbons	95-3296	(0.05)		OK
Hancock	95-3298	(0.015)		OK
Dark Canyon	95-3294	0.067 (0.07)		No data
Willow	95-3299	0.013 (0.009)		No data
Pine	97-1646	0.018 (0.13)		No data
Talus	97-1644	(0.044)		No data
Sidehill	97-1872	(0.007)		No Data
Spring in Slot	97-826	No flow data		No data
Dry	97-1658	(0.005)		No Data

Source: USDI, BLM, 1982c.

<sup>a</sup>WUC: water user claim.

<sup>b</sup>CFS: cubic feet per second.

The water quality is not known on all waters. It is considered good on Dark Canyon, Straight Creek, Gibbons, and Hancock Spring. Bullfrog Creek water is not chemically acceptable.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Mt. Pennell WSA is given in Table 6. Appendix 5 in Volume I provides a description of the mineral and energy resource rating system.

The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would be present in only small amounts.

### • Leasable Minerals

The only known occurrence of a leasable mineral in the WSA is a coal deposit found on Cave Flat. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.



Table 6  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f 2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f 2	c2	Less than 500 metric tons
Coal	f 4	c4	+12.3 million metric tons
Gold	f 2	c3	Less than 100,000 troy ounces
Silver	f 2	c3	Less than 500,000 troy ounces
Copper	f 2	c3	Less than 50,000 metric tons

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

#### • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin, which has oil and gas production established to the east; the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them; the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and the lack of any oil and gas production established from any of the oil and gas wells drilled in the area. It is indicated that, even though intrusive bodies are present, hydrocarbons may exist near the intrusions due to the limited metamorphism associated with them. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic-feet of gas (f2).

The WSA is rated as having a low potential for hydrocarbon accumulations due to the presence of the intrusive bodies (Molenaar, et al., 1983). Two wells, located in the eastern portion of the WSA, did not encounter any shows of oil or gas. Only one well, however, penetrated rocks as old as Mississippian. Scattered to vuggy porosity was encountered in Mississippian rocks indicating that reservoir rocks may underlie the WSA. Oil shows were reported from two other wells in the

area. These wells were drilled on the flank of the Muley Creek Anticline which extends into the WSA. No production of oil or gas has been established from any of these wells.

The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. Oil accumulations are known within the Tar Sand Triangle located to the northeast of the WSA. It is possible that, if the oil exposed in the Tar Sand Triangle migrated up dip within the sedimentary strata, it may have been trapped in stratigraphic or structural traps in the vicinity of the WSA. Stratigraphic traps may be associated with algal mound buildups along the western portion of the Paradox Basin. Structural traps may have formed as a result of deformation of strata around intrusive bodies.

Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to yield significant quantities of hydrocarbons.

Based on the available information, the certainty of occurrence for oil and gas is rated low (c2), due to the general lack of well data and oil and gas shows in the area.

Under the current land use plan, 49,400 acres are in Category 1 (standard stipulations), and 24,900 acres are in Category 2 (special stipulations). There are presently no oil and gas leases in the WSA.

#### • Coal

Coal in the region is found within Cretaceous rocks of the Mancos Shale Formation in the Henry Mountains coal field. The field has an estimated 230.9 million tons of minable coal and is comprised of three zones, described as follows (Doelling and Graham, 1972):

Emery Coal Zone (187.4 million short tons minable): This coal bed is present in the central part of the coal basin and represents the dominant part of the Henry Mountain coal field.

Ferron coal zone (42.0 million short tons minable): developed in Factory Butte, Swap Mesa, and Stanton Mine (southeast end of coal field) areas. Movable thickness occurs mostly in the Factory



Butte area and a small area at the south end of the coal field.

Dakota coal zone (1.5 million short tons minable): usually thin or missing throughout the coal field. This coal bed thickens in small areas (0.25 mile) and has been noted along North Caineville Reef, Waterpocket Fold, and around some of the peaks in the mountain range.

Within the WSA, both the Emery and Ferron coal zones are present. The Emery coal zone includes a coal zone which reaches 15 feet locally and is composed of several benches of coal and shale. The coal benches range in thickness from 2 to 6 feet with a bench at least 4 feet thick present in most exposures (Averitt, 1969). Most coal seams are discontinuous and show large variations in thickness over short distances.

Seven drill holes have penetrated the Emery coal zone in the north Cave Flat area. Coal seams 6.6 to 9.1 feet thick were encountered. Six of the seven holes penetrated the coal at depths of less than 100 feet (Doelling and Graham, 1972).

Most of this coal is surface minable. Calculations of the actual surface minable reserves within the WSA boundary are difficult because of the limited amount of available data. However, using data presented by Doelling and Graham (1972), a rough estimate can be made. By use of their geologic quadrangle maps, which show outcrops and the area underlain by the Emery coal zone, it can be determined that approximately 1,270 acres of the Mt. Pennell WSA contain surface minable seams of coal (over 4 feet thick and less than 100 feet of overburden). Nine measured sections occur within the WSA boundary, and an average coal thickness of 6 feet can be calculated from these data. Therefore, based on these measurements and assuming a ton of coal is roughly equal to 0.92 cubic-yards, it is estimated that 12.3 million metric-tons of surface minable coal lie within the boundary of the WSA.

In certain areas within the WSA, the Emery coal zone is buried by more than 200 feet of overburden which would render it recoverable by underground mining methods. However, underground mining is impractical in the area because the coal seams are often thin or lenticular. Without additional information, no assessment can be made of potential underground minable reserves.

The Ferron coal zone is also present within the WSA. Coal within this zone is of a lesser economic importance and was not evaluated in this document. Small quantities of recoverable coal from this zone may be present, as indicated by coal production from the Stanton coal mine located approximately 4 miles east of the WSA. A few thousand tons of coal was produced from this mine during the late 1800s (SAI, 1982).

Presently, there are no leases or coal-related activities occurring in the WSA as the coal is designated as unsuitable for surface coal mining in the Henry Mountain MFP.

### • Locatable Minerals

Approximately 227 mining claims exist, covering 4,540 acres. A plan of operation for further exploration on claims near the top of Mt. Pennell was filed in 1989. The plan called for 2 miles of 12-foot wide access and drill pad roads down Bulldog Ridge. BLM considered the proposal to be part of a grandfathered use in the WSA. This decision was appealed to the Interior Board of Land Appeals and is still pending.

### • Uranium

The uranium resource potential of the tract is rated as f2 (less than 500 metric tons uranium oxide) (SAI, 1982). Uranium in the area has been produced primarily from the Henry Mountains Mineral Belt which lies a few miles east of the WSA. Uranium deposits within the mineral belt are generally small, averaging 80 metric-tons of mineralized rock each. Most uranium potential within the belt is assigned to the Saltwash Member of the Morrison Formation. This member lies at depths of a few hundred to a few thousand feet beneath the WSA. Even though the WSA contains this formation, it is not thought to be favorable for uranium mineralization (SAI, 1982). A large uranium deposit does occur, however, a few miles south of the WSA in the southern portion of the Henry Mountains Mineral Belt. This deposit is estimated to contain approximately 2,900 metric-tons of uranium oxide ranging in grade from 0.04 to 0.50 percent (SAI, 1982). Based on this information, the certainty that uranium deposits occur within the WSA is low (c2).



## MT. PENNELL WSA

- Gold, Silver, and Copper

The WSA is rated as f2/c4 for gold, silver, and copper mineral resources (SAI, 1982). The deposits occur within vertical fissures in brecciated rock on Mt. Pennell, along contact zones surrounding the intrusive body and possibly within placer deposits along stream beds that drain the mountain. Deposits within the WSA are small and isolated. At most, \$1,000 worth of gold and small amounts of silver were mined from these deposits. Known mineralized areas include a fissure deposit located in the northeast portion of the WSA and a contact zone between the diorite porphyry of the stock and Cretaceous shale located in the southeastern portion of the WSA (SAI, 1982). The grade of these deposits is low. Stream sediments, heavy mineral concentrates, and rock outcrops within the WSA were sampled and analyzed and very minor occurrences of these elements occur (Detra, et al. 1984).

Production of these elements has occurred from a similar geologic environment a few miles to the north. In Bromide Basin, located just south of Mt. Ellen, approximately 700 oz of gold, 3,000 oz of silver, and 9 tons of copper were reportedly produced.

Based on this information, the WSA has a potential for small, isolated deposits bearing gold, silver, and copper. Any deposits would be confined to fissures within the intrusive body and the contact zone around them. Placer deposits have a potential for gold mineralization to a lesser degree. The certainty these deposits exist is reduced to a moderate (c3).

- Salable Minerals

The only known or possible occurrences of salable minerals in the WSA are sand and gravel. Potential markets are very small and there are available sources of supply closer than those in this WSA.

### Wildlife Including Special Status Species

Animals in the WSA include mule deer, rabbits, squirrels, cougar, and coyotes. Also of interest is the Henry Mountain bison herd which uses portions of the WSA for their summer and winter range. Chukar partridge and several other species of birds are found along the water courses. Two endangered species, the peregrine falcon and bald eagle, may occur in the

WSA. In addition, five Category 2 candidate species may also occur in the Mt. Pennell WSA. These include the Great Basin Silverspot butterfly, ferruginous hawk, Mt. Ellen chipmunk, Mt. Ellen pocket gopher, and the white-faced ibis (see Appendix 4 in Volume I). The identified big game ranges in the WSA are listed in Table 7. With overlap of the habitats listed in Table 7, there are about 48,155 acres of crucial deer and/or bison range in the WSA.

Table 7  
Big Game Ranges

Range	Acres
Limited value bison yearlong	2,000
Crucial bison yearlong	6,500
Crucial bison summer	7,000
Crucial bison winter	32,320
Crucial deer winter	9,750
Crucial deer summer	11,500
High priority deer winter	21,500

Source: USDI, BLM, 1983b

The current deer population on crucial summer range within the WSA is estimated at 59 animals. The current average number of adult bison using the area is estimated at 200 animals. Three hundred and forty-six bison (including yearlings and 51 calves) were counted in July 1989. When hunting and natural mortality loss is considered, the herd remains close to the 200 adult animal figure. This population is based on an agreement between BLM and the UDWR (USDI, BLM, 1988b).

No wildlife management facilities exist in the unit and none are proposed. A potential chaining program has been identified in the Final Henry Mountain Grazing Management EIS (USDI, BLM, 1983b) where approximately 1,200 acres in the WSA could be chained with approximately 30 percent of the increase going to the bison herd. This would represent an increase of approximately 40 AUMs for the bison.

### Forest Resources

Stands of aspen, Ponderosa pine, subalpine fir, Douglas fir, spruce, pinyon pine, and juniper are found in the WSA. In total, about 35 percent (25,856 acres) of the WSA contains forest resources. No commercial harvest is taking place due to the lack of demand, steep slopes, and low stocking volumes. The current BLM Henry Mountain MFP shows the WSA closed to commercial timber harvest.



# MT. PENNELL WSA

## Livestock and Wild Horses/Burros

In the eastern portion of the WSA livestock use is confined to the margins of the area due to rugged terrain.

Approximately 1,200 acres in the WSA have been identified for chaining and seeding in the Final Henry Mountain Grazing Management EIS. Approximately 70 percent of the forage increase would be allocated for livestock use; the other 30 percent would go to the bison herd. Livestock would gain approximately 92 AUMs with the treatment.

Five allotments for an estimated 3,282 AUMs are located in the WSA (Table 8). Support facilities include 4 miles of fence, seven reservoirs, two wells, 6 miles of pipeline, and one corral. There are two enclosures in the WSA used for comparison areas in conducting rangeland monitoring studies for livestock and wildlife. In addition to the chaining discussed above, one reservoir and two spring developments are proposed for livestock.

Three of the five allotments have active sheep use. There are nine sites within the WSA that have historically been used as sheep camps. These areas are important to the management of livestock along with the vehicle ways that allow access to these camps.

Predator control was not conducted during the 1986-1987 period in the grazing allotments that comprise the Mt. Pennell WSA (USDA, APHIS, 1988).

There are no wild horses or burros in the WSA.

## Visual Resources

The WSA offers exceptional scenic values. For the most part, the terrain is steep and rugged with several deep canyons. There is a good variety of vegetation and landform which contrasts with the surrounding desert country.

The WSA is visible from a secondary travel route on its northern and eastern sides and from Highway U-276 on the east side. The VRM system rating for the WSA's visual characteristics is shown in Table 9. Refer to Appendix 7 in Volume I for an explanation of the BLM VRM system.

Table 9  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	23,885	32
Scenic Quality Class B	41,155	55
Scenic Quality Class C	<u>9,260</u>	<u>13</u>
Total	74,300	100
Management Class I	0	0
Management Class II	23,885	32
Management Class III	20,951	28
Management Class IV	<u>29,464</u>	<u>40</u>
Total	74,300	100

Source: USDI, BLM, 1982c.

Table 8  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Pennell	56,367	16,810	2,594	332	530 Cattle 200 Sheep	06/01-10/31	4
Steel Butte	74,132	12,820	5,034	712	832 Cattle	10/01-05/31	3
Bullfrog	82,546	25,103	3,442	1,221	449 Cattle 1,075 Sheep	11/01-05/31	3
Sandy No. 2	45,728	15,130	2,228	685	371 Cattle	10/16-05/15	1
Waterpocket	36,531	4,437	3,069	332	511 Cattle 1,075 Sheep	11/01-05/31	6
Total	295,304	74,300	16,337	3,282			17

Sources: BLM File Data.



## Cultural Resources

A total of 52 sites have been recorded in the WSA (USDI, BLM, 1988a). A large majority of the recorded prehistoric sites are surface lithic scatters and are generally small in size. Four of these sites also contain buried deposits or partially buried hearths. Ceramic artifacts of Anasazi, Fremont, or Late Prehistoric Numic origin were recorded at three of the sites. Three lithic scatters are located in alcoves and contain buried cultural materials of undetermined depth. Several of these prehistoric sites are considered to be eligible for nomination to the National Register of Historic Places on the basis of their stratified archaeological deposits. Only one historic site, a juniper fence of unknown age or origin, has been recorded in the WSA.

Seven inventories have been conducted within the boundaries of the WSA. As a result of the Central Utah Coal Project (Hauck, 1977) nine 160-acre quadrants comprising approximately 2 percent of the unit have been intensively surveyed. Quantities of sites within quadrants were highly variable; one quadrant contained 20 sites, one contained five sites, three contained one site each, and no sites were found in four of the quadrants. Using figures from this inventory, an average site density of 447 sites per 23,000 acres (12.5 sites per square mile) was computed for the WSA. The highest site densities are in areas located on mesa tops in the unit's eastern portion and as many as 80 sites per square mile may be present on these physiographic features. Site densities are also high in small drainages where some sites are located on and within the alluvial fill. A second large survey project recorded 10 sites on four 160-acre quadrants in the WSA. The remaining five inventories consist of small plots or linear surveys and only one site was located as a result of all five projects. None of these inventories were specifically designed for the WSA, hence, statistics based on them may be unreliable. However, the potential for finding additional sites in the unit is probably exceptionally high. Based on available data the vast majority of these sites would probably be insignificant lithic scatters; however, Anasazi structural sites have been located adjacent to the WSA on Tarantula Mesa (Hauck, 1977) and similar sites are likely to be found within the boundaries of the WSA.

## Recreation

Fifteen recreational opportunities were evaluated for their quality in the WSA. Fourteen of these opportunities were present in varying degrees. Nine of these activities (backpacking, camping, dayhiking, hunting, nature study, photography, rock climbing, geologic study, and general sightseeing) are above average to excellent in quality in the eastern portion of the WSA. A summary of selected recreational opportunities follows.

The Horn, a prominent rock outcropping on the north end of the WSA, offers excellent opportunities for technical rock climbing due to easy access and a wide variety of difficulty. This formation may have the best climbing opportunity in central Utah. Commercial outfitters do not use the WSA on a regular basis, but the area is used by organized outdoor groups throughout the summer.

Backpacking and dayhiking opportunities are above average due to good access, the large size of the WSA, and a variety of topographic features. Several hiking routes (totaling at least 22 miles) allow one to reach the summit of Mt. Pennell or explore side canyons such as Dark Canyon, Scratch Canyon, Swap Canyon, Muley Creek, and Bullfrog Canyon. Once on top of Mt. Pennell, outstanding scenic vistas of southern Utah and portions of Arizona and Colorado are possible.

Numerous geologic features are available for study, both within and outside the WSA.

Wildlife observation opportunities are above average due to the wide variety of habitat. Bison are frequently seen on the north and west sides of the WSA throughout the summer and fall.

The WSA has no developed recreational facilities. However, there are nine undeveloped camp sites near or on the eastern boundary of the WSA. These camping areas account for an estimated 1,900 visitor days a year including use by big game hunters. Various dispersed recreation activities account for approximately 380 visitor days a year. Rock climbing at The Horn accounts for an additional 300 visitor days. Portions of the WSA are utilized by deer, bison, and upland game and provide opportunities for hunting. The following visitor days are attributed to hunting in the Henry Mountain Resource Area: bison (175 days), deer (342 days), and upland game (1,106



days). The number of hunter days spent in the WSA is unknown.

Under the Henry Mountain MFP the area would be open to ORV use. ORV use is light and vehicles are used on the 22 miles of way and 29 miles of road for hunter access and sightseeing. Visitor use of all types is estimated to be about 2,580 visitor days annually within the WSA. As much as 25 percent of the total visitor days (645 visitor days) involves vehicular access.

## Land Use Plans

There are no rights-of-way, private in-holdings, or non-Federal subsurface rights in the WSA, nor are there any private lands adjacent to the WSA.

The WSA is BLM-administered public land except for nine State sections (5,656.5 acres). The current policy of the State of Utah is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands. In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. Of the 5,656.5 acres of in-held State land, 640 acres are under lease for metals, 640 acres for oil, gas, and hydrocarbons, and all acres for livestock grazing (UDNRE, UDSLFL, 1988). Grazing is the only activity presently occurring on these lands.

The Garfield County Master Plan (Five County Association of Governments, 1984) covers this WSA. The master plan recognizes that the county possesses " . . . Some of the most spectacular scenery in the United States . . . The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one FS unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Mt. Pennell WSA, be retained for multiple use. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The Garfield County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under the BLM Henry Mountain MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action/No Wilderness Alternative. The Henry Mountain MFP has been officially reviewed by the Governor of Utah and found to be consistent with State plans.

Wilderness is not addressed in the Henry Mountain MFP. However, wilderness is part of the BLM multiple-use concept. Land use plans are linked to the Statewide Wilderness EIS through inclusion of the present plan as No Action/No Wilderness Alternative.

## Socioeconomics

### • Demographics

The WSA is within Garfield County, one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 10 presents baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987, population increased to about 4,085. Population projections for the county indicate that the number of people living in Garfield County in the year 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 10  
Baseline and Projected Population and Employment Growth  
Garfield County

	1980	1990	2000	2010
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200

Source: Utah Office of Planning and Budget, 1987.

The closest community to the WSA is Ticaboo, about 25 road miles south, also in Garfield County. Ticaboo had a 1980 population of about 300. Since 1980, the population has declined and services are no longer available there. Hanksville (a small community of approximately 350 people, located about 35 road miles to the north of the WSA) and Green River (approximately 100 road miles north of the WSA in Emery County) are the main gateways and service areas for visitors to the Mt. Pennell WSA.



## • Employment

Table 10 shows the baseline and projected total employment for Garfield and Wayne Counties to the year 2010.

Garfield County is part of the Southwest MCD. Table 11 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (25 percent), trade (20 percent), and nonfarm proprietors (12 percent). Mining provided approximately 2 percent of the direct employment in the MCD.

Table 11  
Southwest Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	6,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to 18 percent, and mining to less than 1 percent of the total MCD employment.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 12 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

The WSA has 227 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent

in the local economy. No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Table 12  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Mining Claim Assessment	\$22,700	None
Livestock Grazing	\$65,640	\$5,054
Recreational Use	<u>\$10,578</u>	<u>Unknown<sup>b</sup></u>
Total	\$98,918	\$5,054

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

<sup>b</sup>A few commercial permits have been issued since 1980.

Seventeen livestock operators have a total grazing privilege of 3,282 AUMs within the WSA. If all this forage were utilized, it would account for \$65,640 of livestock sales and \$16,410 of ranchers' returns to labor and investment.

The WSA's recreational use is moderate and related local expenditures are well distributed. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Mt. Pennell WSA is estimated to be about 2,580 visitors per year.

The WSA generates Federal revenues from mineral leases and claims and livestock grazing fees (Table 12).

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 3,282 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$5,054 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.



## MT. PENNELL WSA

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. The analysis is based on the BLM management actions and anticipated activities presented in the Introduction to Volume IV and the Description of the Alternatives for the Mt. Pennell WSA.

#### No Action/No Wilderness Alternative

- Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 23,885 acres, coal unsuitability determinations on Cave Flat).

In the foreseeable future, disturbance of approximately 1,267 acres from exploration and development of mining claims and rangeland projects would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Eight acres of the disturbance would be for access to State lands (T. 33 S., R. 10 E., sec. 16). Special features would not be significantly affected because the disturbance would be minor involving only 1.7 percent (1,267 acres) of the WSA and the disturbance would either not be located where the special features are located, or mitigation would adequately protect the special features. Some Class A scenery could be disturbed. Proposed water developments and vegetation treatments would benefit wildlife special features because they would increase water sources. Appropriate measures would be taken to protect special status species and cultural values prior to any surface-disturbing activity, and it can be assumed that although individuals would be lost, the viability of populations of the species would be maintained.

During the period of activity, the visual and audible disturbance from mineral exploration, mineral development, vegetation treatments, and rangeland developments would reduce scenic values and opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 10 percent

(7,430 acres) of the WSA would be so affected in the foreseeable future.

The gradual increase in visitor use that would occur would not be expected to significantly reduce wilderness values because the additional use is expected to be small and would be largely primitive in nature. Because future vehicular use would generally be limited by terrain to existing vehicular ways, no additional disturbance from ORV activity is anticipated in the future. The continued and increased vehicular use of existing ways and future mining-related roads would occasionally detract from opportunities for solitude and primitive recreation.

The extent that disturbance from mineral exploration and development would occur on Federal lands and State in-holdings over the long term and, therefore, the long-term loss of wilderness values that would occur is not accurately known. Loss would occur as intrusions increase.

This alternative would not complement the NPS proposal for wilderness management of the contiguous Capitol Reef National Park.

**Conclusion:** Wilderness values would not be preserved by wilderness designation and loss would occur as intrusions increase. Naturalness and opportunities for solitude and primitive recreation would be directly lost on 1,267 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 7,430 acres. Most special features would not be significantly affected, however, areas of Class A scenery would be disturbed.

- Impacts on Soils

It is estimated that up to 67 acres of soil could be disturbed by mineral and energy exploration and development, rangeland projects, and access road construction. Assuming that all disturbance would occur in areas with critical erosion class and that erosion condition would increase one class, soil loss on the 67 acres would increase from 181 cubic-yards per year to 362 cubic-yards per year.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 181 cubic-yards (less than 1 percent) over the current annual soil loss. This is a small increase and the effects would likely be imperceptible. Soil loss would decrease following reclamation.



## MT. PENNELL WSA

The 1,200-acre chaining would be designed to improve ground cover and soil conditions. Groundcover would be disturbed during the early implementation stages (1 to 2 years). Within 3 years ground cover would equal or exceed cover prior to chaining (USDI, BLM, 1983b).

Conclusion: There would be less than a 1-percent increase in soil loss with implementation of the No Action/No Wilderness Alternative.

### • Impacts on Vegetation Including Special Status Species

The 1,267 acres of surface disturbance projected for the No Action/No Wilderness Alternative would mainly occur in the pinyon-juniper woodland. About 1,200 acres of the projected disturbance would result from pinyon-juniper woodland chainings and seedings in the Scratch Canyon area of the WSA. As a result of the chaining and seeding, vegetation composition would change from woodland to grass-shrub. The grass-shrub vegetation would be maintained over the long term. However, once active maintenance ceases, the area will eventually revert back to pinyon-juniper woodland. The chaining and seeding would be designed to improve livestock forage and habitat for the resident bison herd. There would also be a loss of naturalness in the disturbed area for the foreseeable future. However, due to the small size of the disturbance (less than 2 percent of the WSA and 5 percent of the pinyon-juniper woodland), the overall impact would not be significant. The 67 acres of surface disturbance projected for rangeland projects, locatable mineral exploration and development, and road construction would not significantly alter any of the vegetation types in the WSA.

Individual special status plant species could be disturbed by locatable mineral exploration and development. This situation would only exist where such mineral operations would occur on sites of 5 acres or less, where a plan of operations and approval are not required under 43 CFR 3809 Regulations. The Endangered Species Act and subsequent regulations apply to these operations and any loss would be inadvertent. It is not anticipated that mineral-related actions in the WSA would threaten the viability of any of the special status species. Before authorizing other surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas. If any special status species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a

biological opinion when appropriate (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of special status plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Special status plant species would not be significantly affected. The 1,267 acres of projected surface disturbance would alter about 5 percent of the pinyon-juniper woodland in the WSA.

### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

### • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, 21,250 acres of crucial deer range, 21,500 acres of high priority deer winter range, 45,820 acres of crucial bison range, and 2,000 acres of limited-value bison yearlong range would not be protected by application of the Wilderness Management Policy (BLM Manual 8560) with its reduced likelihood for surface-disturbing and other activities. As much as 67 acres of crucial mule deer and bison range could be subject to surface disturbance. This acreage represents approximately 0.1 percent of the total crucial deer and bison range within the WSA. However, with this alternative the potential exists for chaining and seeding approximately 1,200 acres in the WSA which would provide a potential net increase in forage production of 132 AUMs. Approximately 30 percent or 40 AUMs would be allocated to the bison herd and 92 AUMs would be allocated to livestock. This additional forage (including high quality forbs) would help reduce grazing pressure and forage competition on crucial deer summer range within the WSA. The current deer population on crucial summer range within the WSA is estimated at 59 animals (USDI, BLM, 1983b). Because forage competition would be reduced, deer numbers could increase slightly.



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The current number of bison utilizing the area within the WSA is estimated at 200 adult animals (USDI, BLM, 1983b). The loss of 67 acres from surface disturbance would reduce the carrying capacity for the bison population by one or two animals within the WSA. On the other hand, increased AUMs from vegetation treatments on crucial bison summer range within the WSA could provide forage to support an additional 15 animals.

Because reductions in deer and bison numbers from surface disturbance and other activities would be more than compensated for by increased range quality following chaining and seeding, the opportunity exists with this alternative to increase deer and bison populations within the area. The actual balance of use that would result between livestock, deer, and bison is unknown.

There is a slight potential that individual animals of the two endangered and five other special status species that may occur in the WSA could be disturbed by locatable minerals exploration. This would only occur where mineral operations would occur on areas of less than 5 acres, which does not require an approved plan of operations under 43 CFR 3809. The Endangered Species Act and subsequent regulations apply to these operations and any loss would be inadvertent. It is anticipated that mineral-related actions in the WSA would not significantly affect special status species.

Prior to authorizing other surface-disturbance activities, the BLM would require site-specific clearances of the potentially disturbed areas. If any special status species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of threatened, endangered, or other special status animal species would be maintained with the No Action/No Wilderness Alternative.

**Conclusion:** There would be no significant adverse impacts to wildlife habitat or populations including special status animal species. The bison populations would increase.

### • Impacts on Livestock Management

Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 3,282 AUMs in the WSA currently allocated in portions of five allotments are controlled by 17 permittees. There would be no changes in or effect on the current livestock management under this alternative. There would be no restrictions on use of motor vehicles for maintenance of the 4 miles of fence, seven reservoirs, 6 miles of pipeline, two wells, one corral, and two enclosures. Additional roads or other facilities for livestock, including a 1,200-acre chaining and seeding, two proposed spring developments, and one livestock reservoir, could be developed in the future without regard for wilderness values. Motorized vehicles could continue to be used on the 22 miles of ways in the WSA. About 12 miles of way and 34.1 miles of road in the WSA are used to manage livestock. The nine sheep camps in three allotments could continue to be used as in the past. Disturbance of 67 acres could result in the short-term loss of about three AUMs of livestock forage. This would not be a significant amount.

The Final Henry Mountain Grazing Management EIS (USDI, BLM, 1983b) identified approximately 1,200 acres of pinyon-juniper woodland on the southwest side of Mt. Pennell which could be chained for a predicted forage gain of approximately 132 AUMs. Seventy percent or 92 AUMs would be allocated for livestock use; 30 percent or 40 AUMs would be allocated for the bison herd.

**Conclusion:** Livestock management would not be affected and small increases in grazing levels (92 AUMs) could be made.

### • Impacts on Visual Resources

With this alternative 67 acres of disturbance would occur from mineral and energy-related exploration and development, rangeland development, access-road construction, and 1,200 acres of disturbance could occur from pinyon-juniper chaining and seeding. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas. VRM objectives would probably not be met in VRM Class II areas. Even after rehabilitation, some permanent localized degradation would be expected. The 1,200-acre chaining and seeding would create long-term visual contrasts. If roads, vehicular ways, and drill pads are located throughout the area of mineral



exploration and development, visual quality could be indirectly reduced in quality on up to an additional 7,430 acres.

Conclusion: Direct loss of visual quality would occur on 1,267 acres of the WSA and indirect reduction of visual quality would occur on up to an additional 7,430 acres more.

## • Impacts on Cultural Resources

An estimated 1,200 acres of surface disturbance most resulting from the proposed Scratch Canyon chaining project would occur in the foreseeable future. However, no sites have been recorded in the Scratch Canyon vicinity. One quadrant in which no sites were found has been intensively inventoried in the Scratch Canyon area indicating that site densities there are probably relatively low. The entire WSA would remain open to mineral location and leasing, and it is estimated that approximately 57 acres of disturbance due to mineral exploration and development would occur in the foreseeable future. Some sites could be subject to disturbance or loss in areas where locatable mineral exploration and development occurs on areas less than 5 acres in size and not subject to regulations contained in 43 CFR 3809. However, sites in the WSA would continue to receive protection under existing Federal and State antiquities laws, and the probability of such minerals development occurring on or near cultural sites is low. No coal development would occur on Cave Flat where several recorded sites are located and site densities are expected to be high. Any surface disturbance such as the Scratch Canyon chaining and seeding would be preceded by standard inventory and mitigation procedures; however, many sites especially those that can not be identified by surface inspection may be inadvertently damaged or lost. In addition, increased activity in developed areas may provide opportunities for illegal artifact collection.

With this alternative, all 74,300 acres of the WSA would remain open to ORV use and 22 miles of way would remain open to vehicular access. ORV activity does not currently constitute a significant use of the WSA and probably will not become important in the future due to topographic constraints. Although it is not likely to occur, some cultural resources may receive unintentional damage as a result of ORV activity. In addition, general vehicular access to the unit may increase artifact collection and vandalization opportunities (Nickens, et.al., 1981).

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions of wilderness values maintenance.

Conclusion: Loss or damage to archaeological sites may occur due to mineral exploration, surface development and/or continued vehicular use.

## • Impacts on Recreation

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. With this alternative, disturbance is possible on 1,267 acres. If roads and drill pads are located throughout the WSA, primitive recreational opportunities would be significantly reduced in quality. However, roads and ways created for mineral and energy exploration would improve access into the area for nonprimitive recreation. The WSA would remain open to ORV use under this alternative.

Chaining would negatively impact sightseeing and primitive recreation opportunities because of effects of intrusions on scenic and primitive values. However, chaining would improve big game habitat and would increase the opportunity for zoological sightseeing and hunting (USDI, BLM, 1983b).

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Cordell and Hendee, 1982; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the next 30 years. At this rate overall recreational use could increase from 2,580 current visitor days per year to between 3,884 and 9,933 visitor days at the end of 30 years. About 25 percent of this use would continue to be vehicular in nature.

Conclusion: The quality of primitive recreation opportunities would be reduced by mineral exploration, chaining and seeding, and the continued use of 22 miles of way.

## • Impacts on Local Economic Conditions

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would



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remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. Temporary (4 to 5 months) increases of up to 48 jobs could be expected from mineral exploration activities in the foreseeable future. This would represent an approximately 2.4-percent increase over current employment levels for Garfield County or a 6-percent increase for Wayne County.

There would be no livestock-related economic losses because the existing grazing use (3,282 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$65,640 annually in livestock sales and \$16,410 of ranchers' return to labor and investment. The identified potential chaining that would produce 92 AUMs of new allocated forage could lead to an additional \$1,840 of livestock sales and \$400 of ranchers' returns to labor and investment per year.

Recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the next 30 years. Recreational use in the area is estimated to increase to between 3,884 and 9,933 visitor days per year over the next 30 years and overall recreation-related expenditures average \$4.10 per visitor day. Thus, recreation-related expenditures attributable to the WSA would likely not be of major significance to the local economy.

Federal and State revenues would not be reduced by this alternative. All acreages within the WSA would be open to oil and gas leasing. If leased they would bring up to \$148,600 additional Federal lease fee revenues per year in addition to new royalties from lease production if oil and gas were discovered and produced. Half of these monies would be allocated to the State, a portion of which could reach the local economy. This is not expected to occur since the oil and gas resource is small and more favorable deposits exist elsewhere. Collection of livestock grazing fees (\$5,054 per year) would continue. The additional 92 AUMs of forage that would be produced by the identified potential chaining and allocation to livestock under this alternative would increase Federal revenues by up to \$142 annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

Conclusion: Present economic conditions would not be affected. Mineral activity could result in a temporary

2.4 percent-increase (48 jobs) in employment for Garfield County and/or a 6-percent increase in employment for Wayne County.

### All Wilderness Alternative (74,300 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 74,300 acres as wilderness would contribute to the preservation of the wilderness values in the Mt. Pennell WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 71,000 acres that meet the criteria for naturalness and 3,300 acres that do not. Solitude and primitive and unconfined recreation would be protected on approximately 17,800 acres that meet and 56,500 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, cultural values, endangered and sensitive species, and perennial streams, would also be protected.

Complete preservation of wilderness values would not be assured because of valid existing rights. In the foreseeable future, direct disturbance of up to 26 acres is anticipated from exploration and development of valid mining claims and development of two springs. Eight of these acres of disturbance would be attributed to providing access to State lands (T. 33 S., T. 10 E., sec. 16). Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA. Up to 2 percent (1,486 acres) could be affected. These disturbances would have long-term effects on wilderness values in localized areas but would not be expected to significantly affect wilderness values in the area as a whole. In most cases, special features would not be negatively affected because the direct disturbance would be minor involving only 0.03 percent of the WSA. Some Class A scenery would be disturbed. The spring developments would meet wilderness management criteria and would benefit wildlife special features because of additional water sources they would create. Appropriate measures would be taken to protect special status species and cultural values prior to any



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surface-disturbing activity, and it is projected that no negative impact would occur to these values.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for long-term development of existing mining claims and State in-holdings is not accurately known but would be less with this alternative than with No Action/No Wilderness due to application of mitigation that would protect wilderness values subject to valid existing rights.

The gradual increase in visitor use would be primitive in nature and would be managed so as to not result in the loss of wilderness values.

This alternative would complement the NPS proposal for wilderness management of the adjacent Capitol Reef National Park.

Conclusion: Wilderness designation would preserve wilderness values overall in the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly lost on 26 acres and indirectly reduced in quality on up to an additional 1,486 acres of the WSA. Special features, including Class A scenery, wildlife associated with wilderness, cultural values, endangered and sensitive species, and perennial streams, would be protected. However, some Class A scenery would be disturbed.

### • Impacts on Soils

Implementation of this alternative would result in only 25 acres being disturbed due to locatable mineral exploration and development, new access, and 1 acre due to the development of two springs. This would be less than half of the 57 acres which would be disturbed with the No Action/No Wilderness Alternative. Thus, soil loss would be less than half of the 154 cubic-yards per year increase discussed in No Action/No Wilderness Alternative. Potential improvements to soil conditions from the 1,200 pinyon-juniper chaining and seeding would be foregone with this alternative.

Conclusion: Erosion and soil loss would remain at present levels.

### • Impacts on Vegetation Including Special Status Species

The vegetation resource, including special status species, would be provided with additional protection over the entire WSA. Prior to any surface disturbance (estimated 26 acres), BLM would require site-specific clearances as described in the No Action/No Wilderness Alternative. If necessary, consultation with the FWS would be undertaken per the Endangered Species Act and BLM policy. Because of the insignificant amount of surface disturbance and the required clearances, no significant impacts to special status species are projected.

Conclusion: Vegetation types and special status species would be protected from disturbance.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

No exploration or development of oil and gas is presently occurring and none is expected since there are no leases in the WSA. None would be issued prior to or following wilderness designation.

Exploration for and development of a potential resource of less than 10 million barrels of oil or less than 60 billion cubic-feet of natural gas (in-place) with 3 million barrels of oil or 18 billion cubic-feet of natural gas that could be recoverable would be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of potential oil and gas recovery.

Approximately 12.3 million tons of coal on 1,270 acres could not be mined. This represents 2 to 4 percent of coal available in the Henry Mountain coal field. Since the identified coal area has already been established as unsuitable for surface mining activities and underground recovery is not feasible, this would not be a significant change from the present situation.



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### • Locatable Minerals

Approximately 4,540 acres are covered by 227 mining claims within the WSA. There are no known commercial deposits of gold, copper, silver, or uranium in the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. The most significant impact to minerals would occur if the potential minerals are not within mining claims filed prior to designation. In that case the potential for recovery of up to 500 metric-tons of uranium, 100,000 oz of gold, 500,000 oz of silver, and 50,000 metric-tons of copper would be foregone. After designation, all other lands within the WSA (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It is believed that most significant deposits are already under claim. Because production of these metals are not occurring and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that major developments would occur even without wilderness designation. However, the potential for production of small amounts of uranium, gold, silver, and copper from existing claims could be foregone. The loss of locatable mineral resources or their production would not be significant on a local, regional, or national level but would be important to mining claimants.

**Conclusion:** Wilderness designation would limit potential exploration and development opportunities for locatable minerals to those under valid mining claims at the time of designation. The opportunity to produce small amounts of locatable minerals would be foregone. Significant leasable mineral production would not be foregone.

### • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative 48,155 acres of crucial deer and/or bison habitat, including 21,250 acres of crucial deer range and 45,820 acres of crucial bison range (refer to Table 7) would be protected by the application of the Wilderness Management Policy (BLM Manual 8560) and by the reduced likelihood for surface-disturbing and other activities. However, 25 acres of crucial deer summer range could be subject to surface disturbance associated with existing miner-

al rights and construction of new access to in-held State lands. This acreage represents less than 0.1 percent of the total crucial deer and bison habitat within the WSA. In addition, this alternative would preclude the opportunity for chaining and reseeding as much as 1,200 acres of pinyon-juniper woodland in the southwest side of Mt. Pennell on crucial deer and bison summer range. Thirty percent of the forage increase or 40 AUMs would be allocated to bison. Because summer range is considered a limiting factor for mule deer in the Henry Mountains (USDI, BLM, 1983b) and vegetation treatments that would enhance the quality of this range would not be allowed, mule deer numbers in the WSA would be expected to remain at their present low levels. Because the chaining would not be allowed, a potential for approximately 40 AUMs of bison forage increase would be foregone with this alternative.

Even though there is sufficient forage in the WSA to meet current bison needs (USDI, BLM, 1983b), vegetation treatments are important to bison. Not only would these treatments provide additional forage, but they would also help reduce grazing pressure and forage competition on other crucial bison summer ranges in the vicinity of the WSA.

Because vegetation treatments enhancing the quality of crucial summer ranges would not be allowed, bison numbers (approximately 200 adult animals presently) within the WSA would be expected to remain static in the long term with this alternative.

The two endangered and five other special status species which may occur in the WSA would be provided with additional protection over the entire area. Prior to any surface disturbance (estimated 25 acres), BLM would require site-specific clearances as described in the No Action/No Wilderness Alternative. If necessary, consultation with the FWS would be undertaken per the Endangered Species Act and BLM policy. Therefore, no significant impacts to special status wildlife species would occur.

**Conclusion:** Wildlife including special status species would be protected by the All Wilderness Alternative. An increase in bison forage (40 AUMs) would not be realized and the bison populations would remain at the present level.

### • Impacts on Livestock Management

Present levels of domestic livestock grazing would continue as authorized in the Henry Mountain MFP.



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The estimated 3,282 AUMs currently allocated in the WSA are controlled by 17 livestock permittees. Additional roads or other facilities for livestock handling could be prevented if not compatible with wilderness values. Vehicle access to nine sheep camps in three allotments would be precluded.

Approximately 1,200 acres have been identified for chaining and seeding with a predicted gain of approximately 132 AUMs. Seventy percent or 92 AUMs would be allocated to livestock, 30 percent or 40 AUMs would be allocated to bison. With this alternative, this potential gain would be lost as would the opportunity to develop a livestock reservoir. The impact to the livestock industry within the area would be relatively small because the 92 potential AUMs represent only a 3-percent increase in forage within the WSA. Designation of the WSA as wilderness could reduce short-term forage loss due to mineral and energy exploration and development.

Conclusion: Wilderness designation would not affect current grazing levels but would necessitate changes in livestock management and supervision that would result in inconvenience and a slight increase in management costs for 17 livestock permittees. Access to 22 miles of existing ways and nine sheep camps would be restricted. A 1,200-acre chaining and seeding and one livestock reservoir would be precluded.

### • Impacts on Visual Resources

This alternative would ensure preservation of the visual resources in the Sawmill Basin area. This area is easily observed from the Lonesome Beaver Campground, Wickiup Pass, Bull Creek Pass, and the summit of Mt. Ellen. With this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), closure to ORVs, and closure of the entire area to future mineral leasing and location.

With this alternative the projected surface disturbance would be reduced from 67 acres to 26 acres. Eight of these acres would be disturbed by construction of new access to in-held State lands. Although mitigating measures would be applied to reduce visual contrast, visual quality would be degraded, and VRM Class I management objectives would not be met on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims cannot

be denied, visual resources would be indirectly reduced on up to 2 percent (1,486 acres) of the WSA. However, visual quality would probably be preserved in the WSA as a whole.

Conclusion: Visual resources would be protected throughout the WSA. Direct loss of visual quality would occur on much less than 1 percent (26 acres) of the WSA. Indirect reduction of visual quality would occur on up to 2 percent (1,486 acres) more.

### • Impacts on Cultural Resources

With this alternative all 74,300 acres would be withdrawn from mineral location and closed to leasing and sale. Except for an estimated 25 acres of disturbance resulting from development of existing mining claims, access-road construction, and water-improvement projects, the WSA and all cultural resources in it would be completely protected from surface disturbance. In addition, archaeological sites would be protected from the secondary impacts resulting from increased access and activity in the area.

All 74,300 acres would be closed to ORV use, thus, eliminating any possibility of inadvertent damage to cultural resources. Approximately 22 miles of way would be closed to all vehicular traffic. The complete elimination of vehicular access to the WSA would indirectly help protect archaeological sites from intentional vandalism and artifact collection (Nickens, et al., 1981). A cherry-stemmed road would continue to provide some motorized access to the interior of the western two-thirds of the WSA where site densities are high.

As recreational use of the unit increases, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access, collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility resulting from wilderness designation may encourage large scale commercial looting. No such sites have yet been identified in the WSA. Over the long term, the protection of cultural resources from ORV activity, vehicular access, and surface development would probably outweigh any increases in vandalism associated with increased recreational use.

All cultural resource management procedures would be subject to the restriction of wilderness designation (Neumann and Reinburg, 1988). Access to sites



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for stabilization, interpretation, or excavation may be limited or denied.

Conclusion: Over the long term, protection from most surface disturbance would probably outweigh any potential for increased vandalism. Closure to all vehicular access would protect sites from unintentional damage and generally decrease accessibility in the unit.

### • Impacts on Recreation

Primitive-type recreational use of the WSA is estimated to increase about 2 to 7 percent per year over the next 30 years in relation to population increases and current trends of recreational use. Management provided through a Wilderness Management Plan would control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the use. Recreation use involving vehicles would be eliminated, and an initial drop in overall recreational use of the WSA would probably occur.

The All Wilderness Alternative would be expected to benefit primitive recreation opportunities by reducing the likelihood of surface-disturbing activities from the 1,267 acres projected for the No Action/No Wilderness Alternative to 26 acres and increasing management attention and recognition of recreation values. The hiking routes to the summit of Mt. Pennell, the rock climbing opportunities at The Horn, the undeveloped camping areas, and opportunities for hiking, hunting, camping, and photography would be enhanced. Potential increases in zoological sightseeing and hunting from increases in wildlife populations that could result from chaining of pinyon-juniper vegetation would be foregone.

The entire 74,300 acres, including 22 miles of vehicular ways, would be closed to ORV use and would no longer be available for recreational access which would probably reduce use of the area for hunting. Approximately 29 miles of road that would be cherry-stemmed or adjacent to the WSA would remain open to vehicular use.

Conclusion: Implementation of the All Wilderness Alternative could benefit primitive recreation by reducing the likelihood for surface-disturbing activities and eliminating ORV use. Motorized recreational use on 22 miles of existing way would be foregone. Access for hunting would be restricted to foot or horseback.

### • Impacts on Local Economic Conditions

There could be a slight change in current trends of population, employment, and local income distribution with this alternative.

Because of restrictions placed on the use of resources under wilderness designation, there could be losses in local income and Federal revenues currently provided by resource uses in the WSA (Table 12), as well as loss of potential increases in income and Federal revenues that could occur under the No Action/No Wilderness Alternative.

There is potential for mineral exploration and development in the WSA. Existing mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration for minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be under the No Action/No Wilderness Alternative. The short-term employment of 16 people for locatable mineral exploration and development represents a reduction of 32 potential jobs from the No Action/No Wilderness Alternative. In addition, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$65,640 of livestock sales and \$16,410 of ranchers' return to labor and investment. The proposed chaining for increase in livestock forage would be foregone along with the potential increase of \$1,840 of livestock sales and \$460 of ranchers' return to labor and investment.

There could be a loss of up to \$148,680 per year of oil and gas lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production could also be foregone. However, this impact is not expected to occur because the potential for oil and gas exploration and development is low.

Because the identified potential chaining would not be developed and used, an estimated annual \$142 of Federal grazing revenues from 92 additional AUMs would be foregone. Recreation-related Federal revenues would initially decrease, but may eventually increase if the demand for commercial outfitter services increases. Commercial outfitters do not use the WSA on a regular basis, but designation could lead to more commercial-recreational use of the area.



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Conclusion: Wilderness designation would not significantly affect local economic conditions. There would be temporary impacts to local economic conditions through a reduction of 32 potential jobs in the locatable mineral industry.

### **Partial Wilderness Alternative (Proposed Action) (25,800 Acres)**

- Impacts on Wilderness Values

Wilderness designation of 25,800 acres would contribute to preservation of the area's wilderness values. In the foreseeable future, impacts would be about the same as identified for the All Wilderness Alternative. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure including closure of 3 miles of ways, and closure to future mineral leasing and location. Naturalness (about 25,790 acres meet and 10 acres do not meet the standards for naturalness), outstanding opportunities for solitude and primitive recreation (about 17,800 acres meet and 8,000 acres do not meet the standards for outstanding), and the best special features, including Class A scenery on Mt. Pennell and The Horn, would be protected. Additional protection would be applied to special status species and cultural values.

Direct loss of naturalness and opportunities for solitude and primitive recreation due to surface disturbance from allowable mineral exploration and development, and new access to in-held State land would occur on up to 26 acres within the designated portion. Special features would be largely preserved because direct disturbance would involve only 0.03 percent of the WSA and, except for Class A scenery, development is not expected in areas where special features are located. In addition, appropriate measures would be taken to protect special status species and cultural values prior to any surface-disturbing activity, and impacts on these features would not be significant.

Sights and sounds from foreseeable development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas involving as much as 2 percent (1,486 acres) of the WSA. This type of impact would be in the designated area and would generally be in areas considered to have outstanding opportunities for solitude and primitive recreation.

Elimination of ORV use in the designated area would improve opportunities for solitude and primitive recreation in the WSA, although vehicular use of 19 miles of ways in the nondesignated area would continue to detract from these opportunities during the period of activity.

The extent that disturbance would occur on Federal lands and State in-holdings over the long term, and therefore the long-term loss of wilderness values that would occur is not accurately known, but would be less than with the No Action/No Wilderness Alternative due to application of mitigation in the designated area that would limit development subject to valid existing rights.

This alternative would not complement the NPS proposal for wilderness management of the contiguous Capitol Reef National Park.

Conclusion: Wilderness values would be preserved overall in the designated area which is approximately 35 percent of the WSA. Naturalness and opportunities for solitude and primitive recreation would be directly lost on 26 acres of the WSA and indirectly reduced in quality on up to an additional 1,486 acres. Most special features would be preserved, although some Class A scenery would be disturbed.

- Impacts on Soils

Projected surface disturbance would occur inside the designated portion of the WSA and impacts on soils would be the same as discussed for the All Wilderness Alternative.

Conclusion: Erosion and soil loss would remain at present levels.

- Impacts on Vegetation Including Special Status Species

The vegetation resource in the designated portion (35 percent) of the WSA, including special status species, would be provided with the additional protection described in the All Wilderness Alternative. Because only 26 acres of surface disturbance is projected for the designated portion, major vegetation types or special status species would not be significantly affected.

No surface disturbance is projected for the nondesignated portion of the WSA, therefore, no impacts to



the vegetation resource, including special status species, would occur.

Conclusion: Vegetation types and special status species would receive additional protection on 35 percent of the WSA. Impacts on vegetation types and special status species from projected surface disturbance would not be significant.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

The area that would be designated wilderness would be placed in Category 4 status with no new leasing.

It cannot be determined how much of the existing potential resource of less than 10 million barrels of in-place oil or less than 60 billion cubic-feet of natural gas falls within the area that would be designated as wilderness under this alternative. However, it is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Approximately 12.3 million tons of coal on 1,270 acres would be within the 48,500-acre nondesignated portion of the WSA. However, coal would not be recoverable under this alternative because the area would continue to be managed as unsuitable for surface mining, and underground mining is not feasible in the WSA.

- Locatable Minerals

There are 1,080 acres of existing mining claims which fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Based on the known occurrence of minerals in the WSA all of the 500 metric-tons of uranium, 100,000 oz of gold, 500,000 oz of silver, and 50,000 metric-tons of copper potentially in the

WSA are thought to be within the area that would be designated as wilderness under this alternative. If mineral deposits were not included in mining claims filed before designation, the potential for recovery of the uranium, gold, silver, and copper would be foregone as with the All Wilderness Alternative. In the nondesignated area, mineral location, exploration and development could occur without regard for wilderness values. However, this is not anticipated because of low mineral values in this area.

Because it is assumed that all significant deposits are already under claim and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that major development will occur even without wilderness designation. As with the All Wilderness Alternative, this alternative would prevent recovery of small amounts of uranium, gold, silver, and copper.

Conclusion: Implementation of the Partial Wilderness Alternative would limit potential exploration for locatable minerals in the designated area to those under valid mineral claims at the time of designation. The potential for production of small amounts of uranium, gold, silver, and copper would be foregone.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Animal populations would be provided with some benefits due to preservation of solitude and naturalness on the 25,800-acre designated area. With this alternative there would be a total of 25 acres disturbed due to locatable mineral exploration and development and new access to State in-held lands (all in the designated area). This acreage represents less than 0.1 percent of the total crucial deer and bison habitat within the WSA. The wildlife resources in the designated area would be provided additional protection as described for the All Wilderness Alternative. On the nondesignated area, there is a slight potential that individual animals of the two endangered and five special status species, which may occur in the WSA, could be disturbed where locatable mineral exploration and development is less than 5 acres in size. As described in the No Action/No Wilderness Alternative, the potential for such an occurrence would be slight. Although individual animals may be affected, such actions would not affect the continued existence of any of the special status species.



Prior to authorizing any surface-disturbing activities, BLM would require site-specific inventories and take appropriate mitigation measures where needed.

In addition, this alternative would also preclude the opportunity for chaining and seeding of 1,200 acres on crucial deer and bison summer range as described in the All Wilderness Alternative. Mule deer numbers in the WSA would be expected to remain at their present low levels. Foregone treatments would not provide the potential 40 AUMs of additional forage to bison. Grazing pressure and forage competition on other crucial bison summer ranges in the area would continue as described for the All Wilderness Alternative. Bison numbers (approximately 200 adult animals) within the WSA would be expected to remain static in the long term with this alternative.

Conclusion: Wildlife habitat and populations would receive additional protection on 35 percent of the WSA. There would be no significant impacts to wildlife or populations including special status species. A slight increase in forage for bison (40 AUMs) would be foregone and the bison populations would remain at the present level.

## • Impacts on Livestock Management

Overall livestock grazing allocations would remain as at present. The portion of the WSA that would be designated presently supports 891 of the total 3,282 AUMs of livestock use in the WSA. The Final Henry Mountain Grazing Management EIS identified approximately 1,200 acres on the southwest side of Mt. Pennell which could be chained for a predicted forage gain of approximately 132 AUMs. Under the MFP, 70 percent or 92 AUMs would be allocated for livestock use and 30 percent or 40 AUMs would be allocated for the bison herd. Under this alternative, this potential would be foregone. Wilderness designation of 25,800 acres would affect domestic livestock grazing the same as with the All Wilderness Alternative. Access would be precluded to five sheep camps in the Mt. Pennell allotment and would require some adjustments in livestock management practices. Of the existing livestock facilities, 2 miles of fence, one reservoir, and one corral would be within the designated portion. Development of future roads or other livestock management facilities for use with the 891 AUMs in the portion that would be designated could be restricted to preserve wilderness values. The present domestic livestock grazing use of 2,391 AUMs in the portion of the WSA that would not be designated would continue as authorized in the BLM Henry Moun-

tain MFP with impacts being the same as described under the No Action/No Wilderness Alternative.

Conclusion: Current levels of grazing use would not be affected by implementation of this alternative. A small increase in livestock forage (92 AUMs) and one livestock reservoir would be precluded. Restrictions on access to five sheep camps would cause inconvenience and added operating costs to one permittee.

## • Impacts on Visual Resources

Wilderness designation would contribute to the preservation of the area's visual resources. With this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced in the designated area.

About 26 acres of direct disturbance associated with development of valid mining claims would occur in the designated area. Visual quality would be lost in the directly disturbed area. In addition, there would be a perceived loss in visual quality on up to 1,486 adjacent acres. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. Although VRM Class I objectives would not be met on portions of the designated area, visual quality would probably not be reduced in the WSA as a whole.

Visual quality in the portion of the WSA that would not be designated wilderness (48,500 acres) would be protected by limitations placed on potential surface-disturbing activities (i.e., coal unsuitability designations, Class II VRM designations). No visual changes are anticipated in this area in the foreseeable future.

Conclusion: Visual resources would be protected in the designated portion which is 35 percent (25,800 acres) of the WSA. Direct loss of visual resources would occur on less than 1 percent (26 acres).

## • Impacts on Cultural Resources

With this alternative six, of the recorded sites would receive protection under wilderness management. Site densities in the area proposed for wilderness designation may be considerably lower than the WSA as a whole because most of the known sites occur on the



mesa tops and small drainages in the western two-thirds of the unit. Most of these physiographic features have been eliminated from wilderness consideration under this alternative. Only 26 acres of surface disturbance is expected in the designated area under this alternative. Resulting impact to cultural resources would probably be negligible.

The remaining 46 recorded sites and all unrecorded sites in the nondesignated area would be protected by existing Federal and State antiquities laws. Although the nondesignated area would remain open to mineral location and leasing, no surface disturbance is expected in the foreseeable future. If any development does occur in these high-site density areas, it would be preceded by appropriate inventory and mitigation procedures.

**Conclusion:** Six recorded sites would receive protection as a result of wilderness designation with this alternative.

## • Impacts on Recreation

Primitive recreational values and opportunities in the 25,800-acre area that would be designated as wilderness would be protected as described in the All Wilderness Alternative. However, approximately 3 miles of ways within the WSA would not be available for recreational access which would have little affect on use of the area for hunting.

In the area that would not be designated (48,500 acres), little change in recreational use is expected. The quality of a user's primitive recreational experience would be reduced by continued use of 19 miles of ways. The area would continue to be easily assessable for hunting by use of vehicles.

Recreational use in the WSA would probably occur at the same rate and at the same ratio of primitive to vehicular use as identified for the No Action/No Wilderness Alternative.

**Conclusion:** Primitive recreational values would be protected on the 25,800-acre designated area. Primitive recreational values would be occasionally reduced in quality on the 48,500-acre nondesignated area through continued use of roads and ways. However, vehicle use in this area would make hunting access easier.

## • Impacts on Local Economic Conditions

With partial designation there could be slight changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (Table 12), as well as loss of potential increases in income and Federal revenues that could occur under the No Action/No Wilderness Alternative.

There is a potential for mineral exploration and development in the WSA (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Existing mining claims could be explored and developed but designation would preclude new leases and claims from being established in the 25,800-acre designated portion of the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with under the No Action/No Wilderness Alternative. The short-term employment of 16 people for locatable mineral exploration and development represents a reduction of potential 32 jobs from the No Action/No Wilderness Alternative. However, because the potential for major mineral development is low it is estimated that potential mineral-related local income would not be significantly reduced by partial wilderness designation. However, any local income related to assessment of future mining claims on the designated 25,800 acres would be lost.

Livestock use and ranchers' income would continue as at present with \$65,640 of livestock sales and \$16,410 of ranchers' return to labor and investment. The proposed chaining for livestock forage would be foregone along with the potential increase of \$1,840 of livestock sales and \$460 of ranchers' return to labor and investment.

Local expenditures for recreation would be as described for the No Action/No Wilderness Alternative. Expenditure would be small (average of \$4.10 per visitor day Statewide).

The loss of 25,800 acres for potential oil and gas leases would cause an eventual loss of up to \$51,600 per year of lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production would also be foregone.



However, this impact is not expected to occur because the potential for oil and gas exploration and development is low.

Because the chaining and seeding would not be developed and used, an estimated annual \$142 of Federal grazing revenues from 92 increased AUMs would be foregone. Recreational-related Federal revenues may increase if the demand for commercial outfitter services increase. Commercial outfitters do not use the WSA on a regular basis, but designation could lead to more commercial recreational use of the WSA.

**Conclusion:** Designation would result in temporary impacts through 32 potential jobs being foregone in the locatable mineral industry. Other economic factors would not be significantly affected.



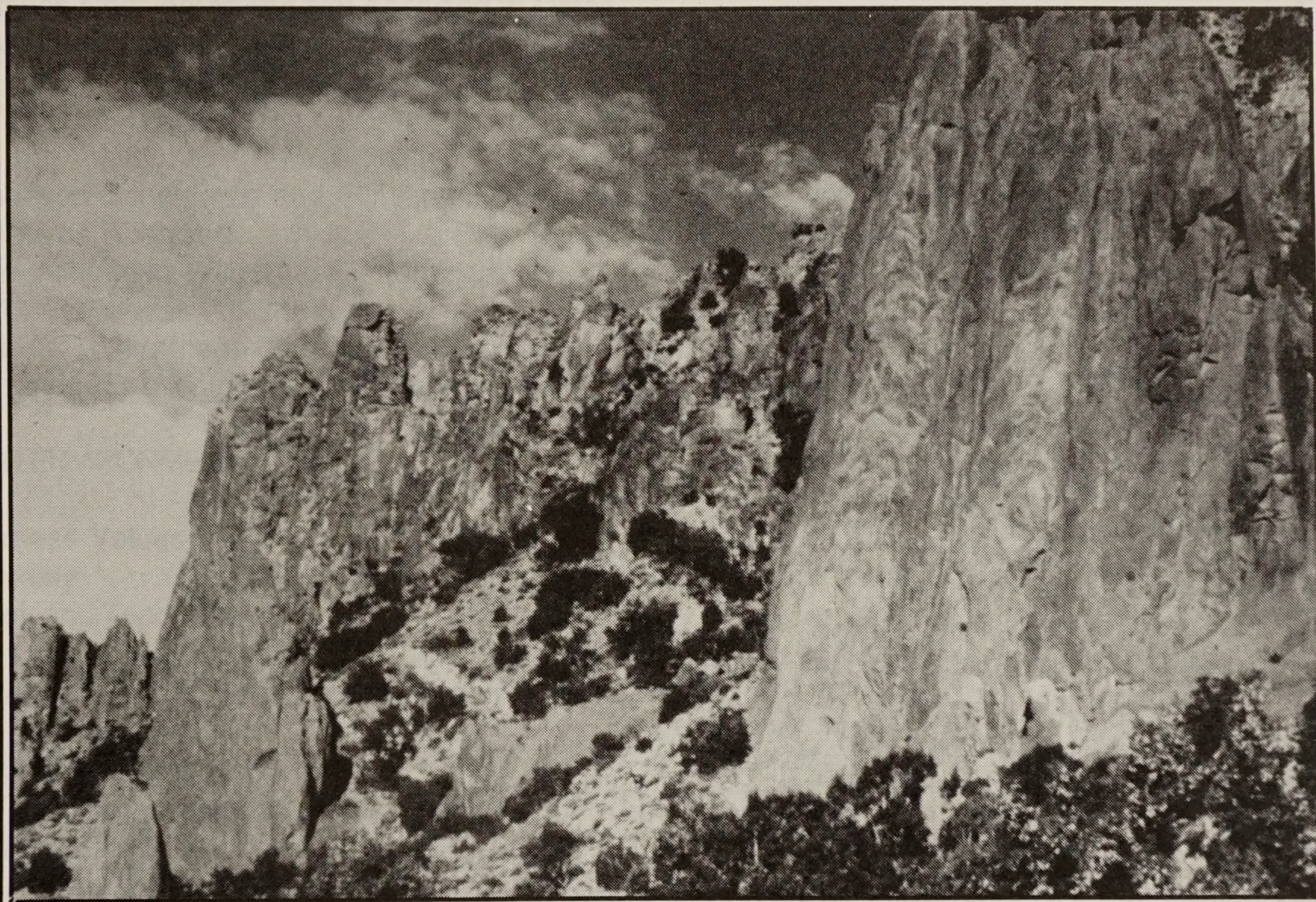
INTRODUCTION

General Description of the Area

Changes for the Final EIS

Similar Issues Identified in Reviewing the Other Comments

# Mt. Hillers WSA



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No Action/No Wilderness Alternative

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# MT. HILLERS WSA

(UT-050-249)

## INTRODUCTION

### General Description of the Area

The Mt. Hillers WSA consists of 20,000 acres of public land in northeastern Garfield County located about 30 miles south of Hanksville, Utah. It is one of four BLM WSAs in the Henry Mountains and is located between the Mt. Pennell and Little Rockies WSAs. Mt. Hillers is a large igneous intrusion surrounded by sedimentary rock. The west and north mountain sides are thickly vegetated with pinyon-juniper woodland, mountain mahogany, shrub oak, and aspen. Ponderosa pine and Douglas fir are found at higher elevations. A stand of bristlecone pine exists on the north side of Mt. Hillers.

Average precipitation in the lower areas is about 7 inches per year while Mt. Hillers receives an average of about 21 inches annually. Temperatures can range from -20 degrees Fahrenheit (F) in winter to over 90 degrees F in summer.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. Small portions of the boundary of the WSA (T. 33 S., R. 11 E., sec. 14; and T. 34 S., R. 11 E., sec. 14) have been redrawn to correct errors in the Draft EIS maps. These changes did not require acreage adjustments because acreage calculations were based on the boundaries as shown in the inventory document and Final EIS.

In addition, the State Section (T. 34 S., R. 11 E., sec. 2) has been cherry-stemmed out of the WSA because of an overlap with T. 33 S., R. 11 E., sec. 36. The cadastral survey created a situation where these two State sections have a common boundary and not just a cornering relationship.

2. The Draft EIS identified a Partial Wilderness Alternative of 17,000 acres. This alternative was designed to analyze as wilderness that portion of the WSA containing the most outstanding wilderness characteristics. The Partial Wilderness Alternative has been revised for the Final EIS by moving the boundary line a 0.50 mile north in T. 34 S., R. 11 E., secs. 14 and 15.

The new Partial Wilderness Alternative contains 16,360 acres, a reduction of 640 acres from that presented in the Draft EIS. This adjustment was made to remove Starr Springs, BLM's Starr Springs Campground, and the adjacent area from the designated area in the Partial Wilderness Alternative. This alternative is BLM's Proposed Action. Both the spring and the area adjacent to the campground have potential for development as an expanded camping area.

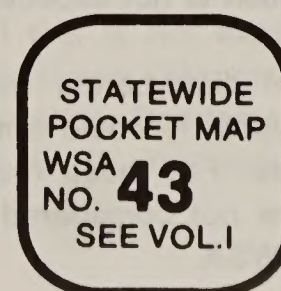
3. The anticipated surface disturbance presented in the Draft EIS (200 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments received relative to the feasibility of development, the disturbance estimates have been revised to focus on activities projected to be feasible in the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of oil and gas related surface disturbance from the 160 acres reported in the Draft EIS to none for the Final EIS. However, anticipated disturbance from locatable mineral activities was increased from 40 acres to 96 acres for the Final EIS. Overall, the Final EIS projects 116 acres of surface disturbance in the foreseeable future.

### Specific Issues Identified in Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies and impacts on water rights), the following issues or impacts specific to the Mt. Hillers WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Air Quality: The public has expressed concern that wilderness designation could lead to redesignation of





# MT. HILLERS WSA

WSAs from the existing Class II PSD classification, to the more stringent Class I rating. A PSD Class I area could restrict future industrial developments in the Mt. Hillers WSA. Since the BLM Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not cause the air quality classification to change. The decision to change air quality classification is the prerogative of the State of Utah rather than BLM. In addition, the anticipated developments in the Mt. Hillers WSA are small and would meet the constraints of Class II PSD guidelines. Therefore, impacts on air quality are not analyzed in detail for the Mt. Hillers WSA.

2. Geology and Topography: The Mt. Hillers WSA contains excellent examples of porphyry stocks and laccoliths. The public has expressed concern that only wilderness designation can adequately protect these features. The only potential threats to these features would be blasting and surface mining on a scale much larger than any projects anticipated for the Mt. Hillers WSA. Therefore, impacts on geologic features are not significant issues for the Mt. Hillers WSA.

3. Soils: The public is concerned that without wilderness designation, mineral development, land treatment, or ORV use would occur on soils that are not easily reclaimed, leading to unacceptable increases in soil erosion. Within the foreseeable future, the anticipated surface disturbance from mineral developments in the Mt. Hillers WSA without wilderness designation would be 96 acres and mitigation would be required through the unnecessary and undue degradation requirements of 43 CFR 3809. Terrain and surface features generally restrict vehicles to existing ways and cherry-stemmed roads. Therefore, impacts on soil erosion are not significant issues for the Mt. Hillers WSA.

4. Forest Resources: Since the Henry Mountain MFP precludes harvest of aspen, Ponderosa pine, bristlecone pine, fir, and Douglas fir, there would be no impacts to those species with or without wilderness designation. There has been little, if any, harvest of pinyon-juniper woodland products from within the WSA and this situation is not expected to change.

If all 116 acres of disturbance would occur in the forest vegetation types, it would amount to 1 percent of the forested area. For these reasons, impacts on forest resources are not considered significant issues for the Mt. Hillers WSA.

5. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restriction on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements, and placing restrictions on predator control. However, under the Wilderness Management Policy (BLM Manual 8560) there shall be no curtailments in grazing simply because an area is wilderness.

There are no proposed rangeland developments which would be precluded by wilderness designation. Access to 3.5 miles of way would be restricted should the area be designated as wilderness. However, since motorized vehicles are used very little in livestock management, little effect on management of livestock grazing is expected. Predator control would be allowed in any designated wilderness area but spring loaded cyanide guns (M-44s) would be prohibited. However, APHIS records indicate that very little predator control has been done in the WSA in the past and other methods of control could be used (USDA, APHIS, 1988). For these reasons, impacts on livestock management are not significant issues for the Mt. Hillers WSA.

## • Issues Analyzed in Detail

The significant issues for the Mt. Hillers WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on vegetation including special status species.
3. Impacts on water uses and quality including salinity in the Colorado River system.
4. Impacts on mineral exploration and production.
5. Impacts on wildlife habitat and populations including special status species.
6. Impacts on visual resources.
7. Impacts on cultural resources.
8. Impacts on recreational use of the WSA.
9. Impacts on local economic conditions.



Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of wilderness values, visual resources, and mineral values.

See Volume VII-B for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 43, for responses to specific comments about the Mt. Hillers WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

An alternative that would add approximately 3,100 acres of Federal, State, and private lands around the boundary of the WSA was suggested in the public comments. This alternative is not analyzed because the inclusion of State and private lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B General Comment Response 3.1).

### Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action/No Wilderness; (2) All Wilderness (20,000 acres); and (3) Partial Wilderness (Proposed Action) (16,360 Acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume IV are also applicable.

#### • No Action/No Wilderness Alternative

With this alternative, none of the 20,000-acre Mt. Hillers WSA would be designated by Congress as part of the NWPS (refer to Map 1). Although BLM's land use plans are regularly updated, it is projected that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1982c). There are no State, private, or split-estate lands in the WSA. The figures and acreages given for this alternative are for Federal lands only.

#### • Management Conditions and Constraints

All 20,000 acres would remain open to mineral location, leasing (with standard and special lease stipulations), and sale. Development work, extraction, and patenting would be allowed on 383 existing mining claims (7,660 acres) and future mining claims. Development would be regulated by undue and unnecessary degradation regulations (43 CFR 3809). An existing oil and gas lease (640 acres) and new leases could be developed under leasing Category 1 (standard stipulations) on about 16,319 acres and Category 2 (special stipulations) on about 3,681 acres.

Although oil and gas resources would be managed as described above, no leasable mineral exploration or development is projected in the WSA because the level of known resources and the probability of their development are too low to support a development assumption. Appendix 6 in Volume I explains the mineral exploration and development projections.

The present domestic livestock grazing use of the 20,000-acre area of the WSA would continue as authorized in the MFP (approximately 240 AUMs).

Existing public water reserves on 782 acres would continue to be withdrawn. The withdrawal segregates those lands from all public land laws and mining of nonmetalliferous minerals.

New water facilities could be developed without consideration for wilderness values. There is a potential to develop an additional spring near the Starr Springs Campground to provide water for an expanded and enlarged campground.

The 20,000 acres, including the 3.5 miles of ways, would remain open for vehicular use in accordance with the Henry Mountain MFP.

The entire 20,000-acre area would continue to be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any anticipated because historical use is very low and this is not expected to change. In addition, the Henry Mountain MFP precludes harvest of existing Ponderosa pine, bristlecone pine, Douglas fir, fir, and aspen stands.



# MT. HILLERS WSA

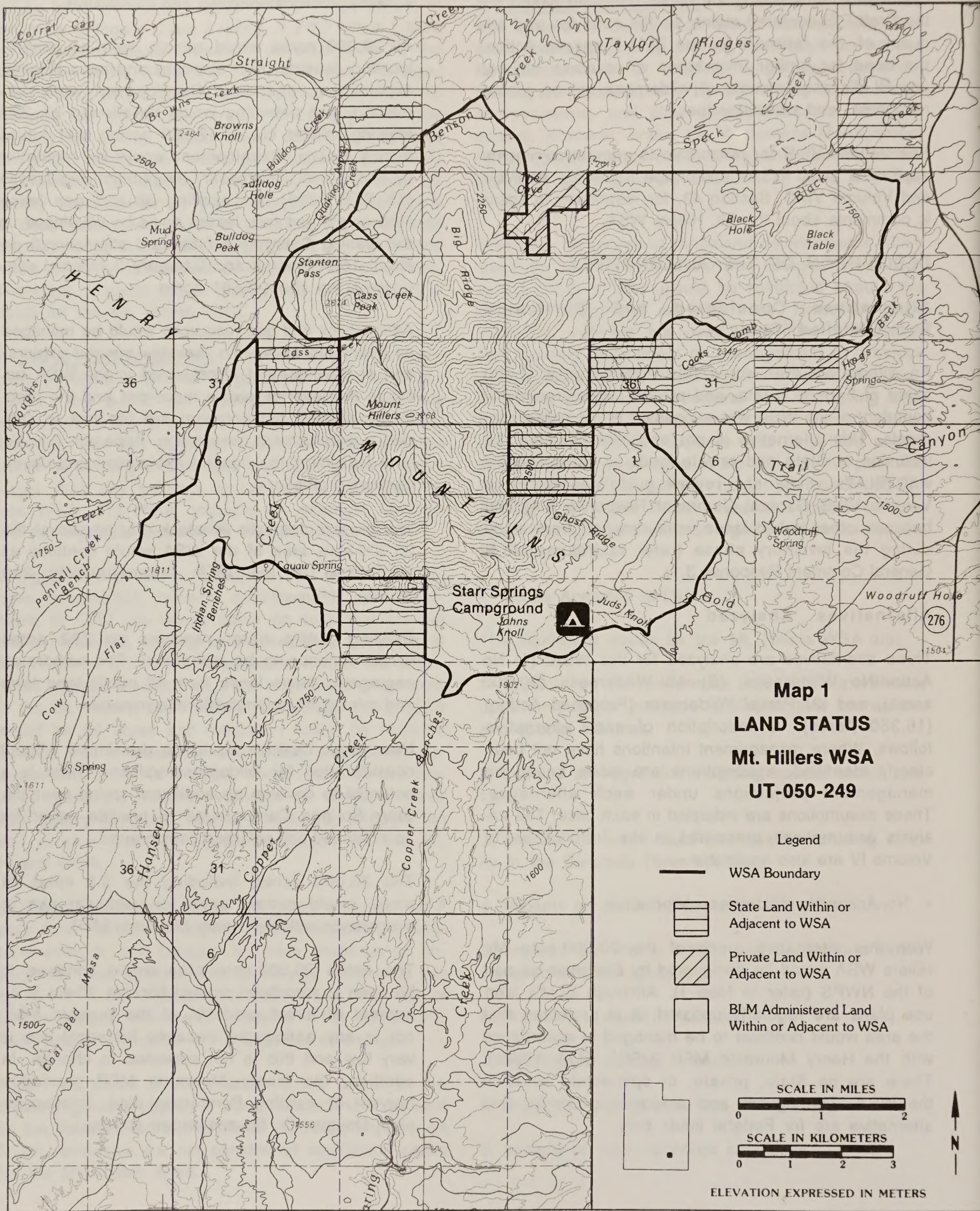
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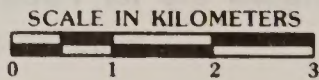
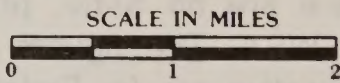
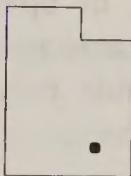
T. 35 S.



**Map 1**  
**LAND STATUS**  
**Mt. Hillers WSA**  
**UT-050-249**

## Legend

- WSA Boundary
- State Land Within or Adjacent to WSA
- Private Land Within or Adjacent to WSA
- BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS



## MT. HILLERS WSA

The Starr Springs Campground could be expanded without regard for wilderness values. Such development would include new camp areas, picnic tables, restrooms, water system, and access roads which would disturb approximately 20 acres.

The area would continue to be managed under VRM Class II on 19,235 acres, Class III on 291 acres, and Class IV on 474 acres.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment, BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 116 acres of surface disturbance. About 96 acres would result from locatable mineral activity. Twenty-seven of these acres would be disturbed by gold and silver exploration in the Mt. Hillers intrusive body in the west-central portion of the WSA. Another 69 acres would be disturbed by uranium development along the extreme southern edge of the WSA. Disturbance in both areas would involve up to 20 miles of access road construction and exploratory drilling. The exploratory drilling for uranium would involve closely spaced pattern drilling to further delineate ore abandonment. Up to 2 years would be necessary to determine successful reclamation. Based on exploration activities typical of the area, up to 80 employees and 200 days would be used for exploration activities in the short term. It is projected that uranium exploration would lead to development and long-term occupancy of the land in the extreme southern part of the WSA and provide up to 15 permanent jobs. The actual surface facilities for a projected underground mine would be located outside of the WSA. Exploration and development activities would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations.

The Starr Springs Campground would be developed which would cause disturbance on 20 acres. No leasable mineral exploration or development is projected. No rangeland, wildlife habitat, watershed projects, or other developments are projected.

No disturbance from ORV use is projected because vehicular traffic would continue to be re-

stricted to existing roads and ways due to the ruggedness of the terrain.

Recreational use is expected to increase over the current estimated use of 790 visitor days per year at a rate of 2 to 7 percent annually. Approximately 542 of the visitor days (68 percent) involve vehicular-based recreation. Recreational use would continue to be about 68 percent vehicular.

- All Wilderness Alternative

With this alternative, all 20,000 acres of the Mt. Hillers WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2.) It would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. The following are specific actions that would be taken under this alternative:

- Management Conditions and Constraints

After wilderness designation, all 20,000 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 7,660 acres of 383 existing mining claims that may be determined valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) with concern for wilderness values. An existing 640-acre oil and gas lease would be phased out upon expiration unless a find of oil or gas resources in commercial quantities is shown.

Present domestic livestock grazing would be allowed to continue as authorized in the Henry Mountain MFP. The 240 AUMs in the WSA would remain available to livestock as presently allotted.

Existing public water reserves on 782 acres would continue to be withdrawn. The withdrawal segregates those lands from certain uses, including mining of nonmetalliferous minerals.

New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President



# MT. HILLERS WSA

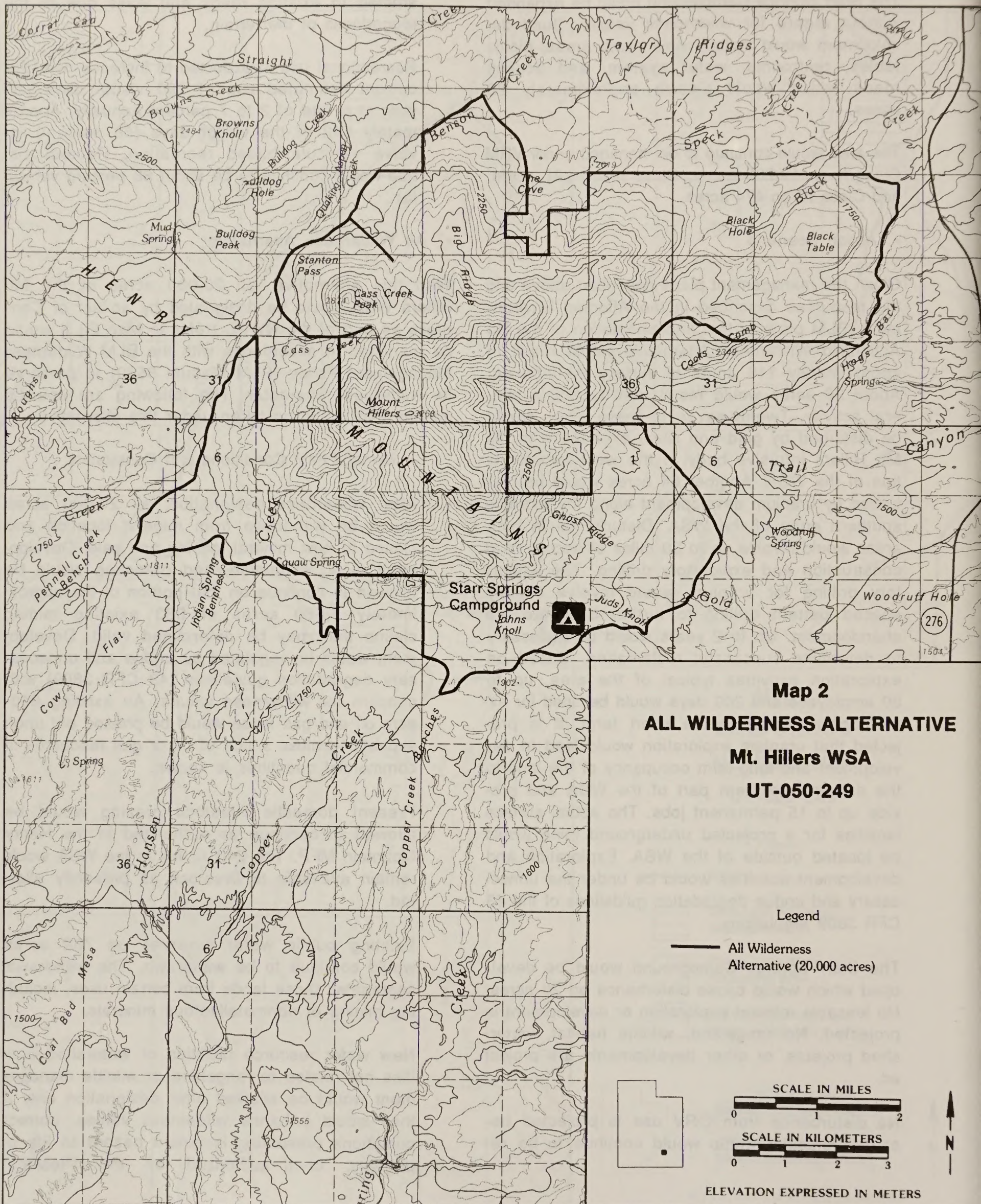
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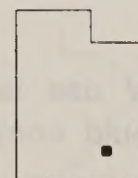
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**Map 2**  
**ALL WILDERNESS ALTERNATIVE**  
**Mt. Hillers WSA**  
**UT-050-249**

## Legend

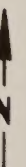
— All Wilderness  
 Alternative (20,000 acres)



SCALE IN MILES  
 0 1 2

SCALE IN KILOMETERS  
 0 1 2 3

ELEVATION EXPRESSED IN METERS





## MT. HILLERS WSA

pursuant to 4(d)(4)(1) of the Wilderness Act (Eighty-eighth Congress of the U.S., 1964). There is a potential to develop an additional spring near the Starr Springs Campground to provide water for an expanded and enlarged campground. This would likely not be allowed after wilderness designation.

The entire 20,000-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 8560. About 3.5 miles of existing vehicular ways would not be available for vehicular use except as indicated above. About 13 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel.

That portion of the Starr Springs Campground within the WSA could not be expanded or maintained using motorized equipment.

Harvest of forest products would not be allowed except for the harvest of pinyon nuts or the non-commercial gathering of dead-and-down wood if accomplished by other than mechanical means for use in the wilderness.

Visual resources on 20,000 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

BLM projects that a total of 29 acres of surface disturbance would occur in the WSA following wilderness designation. This disturbance would result from locatable mineral exploration and development on existing claims as described in the No Action/No Wilderness Alternative except on a more limited scale, including up to 5 miles of access roads. It is projected that 24 employees and 60 days would be used for exploration activities in the foreseeable future. Development activities would occur as discussed in the No Action/No Wilderness Alternative with five permanent jobs provided. Exploration and development would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. No exploration or development is projected from an existing mineral lease located in the WSA. Implementation of the All Wilderness Alternative would preclude new mineral location and mineral leas-

ing. Therefore, no leasable mineral resource would be developed and locatable mineral development would be restricted to existing mining claims following wilderness designation. Expansion of the Starr Springs Campground would not be allowed after wilderness designation.

No disturbance from ORV use is projected because of wilderness management restrictions and topographic constraints.

Primitive recreational use is expected to increase over the current estimated use of 248 visitor days per year at a rate of 2 to 7 percent annually. Vehicular-oriented recreation use (currently 542 visitor days) would not be allowed.

- Partial Wilderness Alternative (Proposed Action) (16,360 Acres)

With this alternative, 16,360 acres of the Mt. Hillers WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to avoid conflicts of wilderness designation with management and potential expansions of the Starr Springs Campground while analyzing as wilderness those portions of this WSA that have the best wilderness values. BLM believes that wilderness values are of a higher quality in areas where outstanding opportunities for solitude and/or primitive recreation exist, preferably in combination with special features. In forming this alternative, the portions of the WSA with outstanding opportunities for solitude and primitive recreation and special features were included where possible within a manageable boundary. The 16,360 acres analyzed as wilderness with this alternative include the steepest and most mountainous portion of the WSA. The 3,640-acre foothill fringe areas within the WSA but outside of that designated as wilderness would be managed in accordance with the Henry Mountain MFP as described for the No Action/No Wilderness Alternative. The 16,360-acre area designated as wilderness would be managed in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) as described in the All Wilderness Alternative. There are no State, private, or split-estate lands involved in the Partial Wilderness Alternative. The figures and acreages given for this alternative are for Federal lands only.

- Management Conditions and Constraints

The 16,360-acre wilderness would be withdrawn from mineral entry and closed to new mineral



# MT. HILLERS WSA

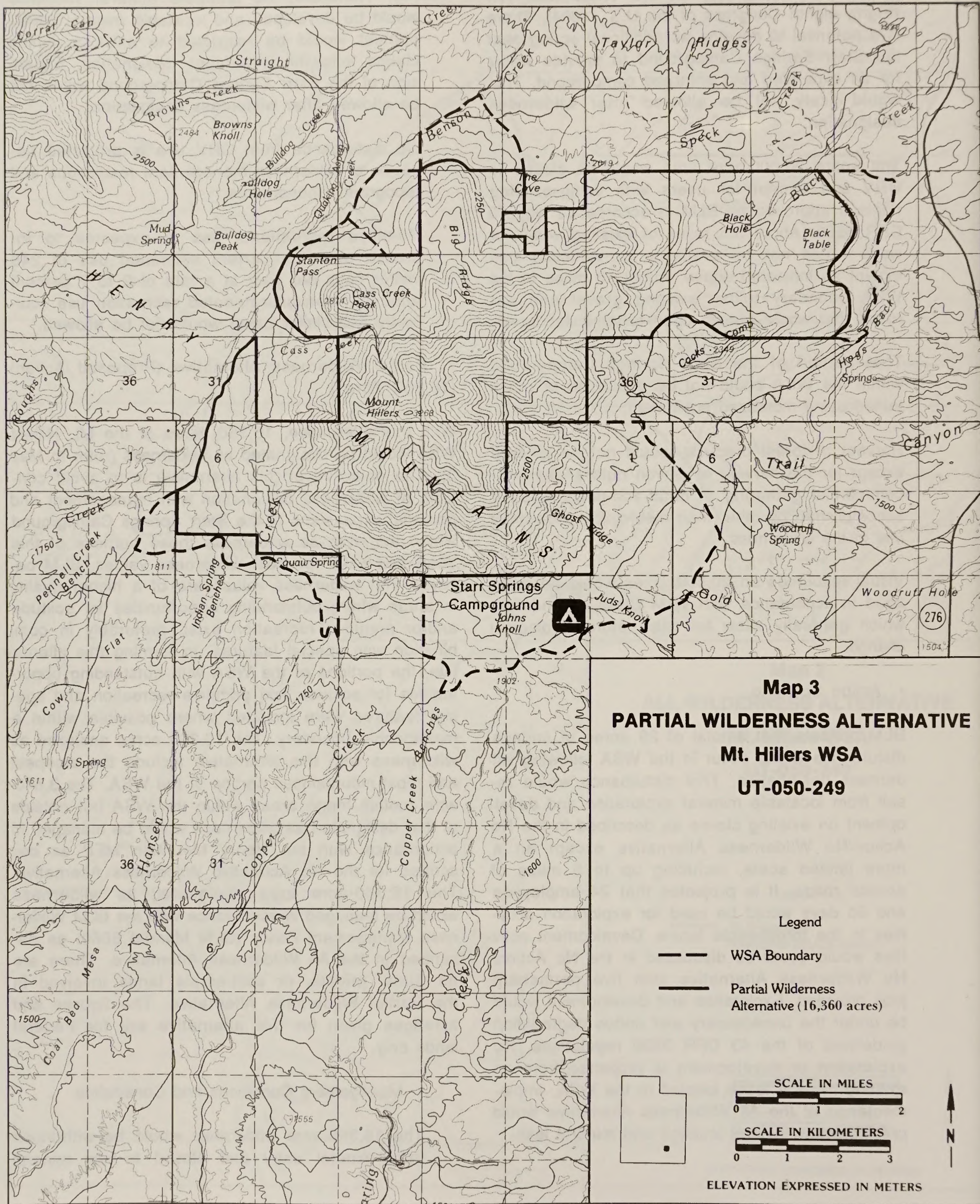
R. 11 E.

R. 12 E.

T. 33 S.

T. 34 S.

T. 35 S.





## MT. HILLERS WSA

leasing and sale. In the 16,360-acre area, development work, extraction, and patenting would be allowed to continue on 5,740 acres of existing mining claims, provided they are valid. The existing oil and gas lease, which covers 640 acres, would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. The 3,640-acre area not designated wilderness would be open to future mineral location, leasing, and sale. Development work, extraction, and patenting of existing mining claims (1,920 acres) and future mining claims could occur in the 3,640-acre area if claims are valid. The area not designated would be managed as leasing Category 1 (standard stipulations) on about 3,151 acres and leasing Category 2 (standard and special stipulations) on about 489 acres. There are no existing leases but future leases in this area could be developed without concern for wilderness values. Nevertheless, exploration and development of leasable minerals is not expected because the level of known resources and the probability of their development are too low to support a development assumption.

Domestic livestock grazing would continue to occur in the 16,360-acre wilderness area. The less than 240 AUMs in the 16,360-acre area would remain available to livestock as presently allotted. In the 3,640-acre nonwilderness area, grazing use would continue as authorized in the MFP.

Existing public water reserve withdrawals on 782 acres (510 acres in the designated area and 272 in nondesignated area) would remain in effect, segregating those lands against all public land laws and mining of nonmetalliferous minerals.

In the 16,360-acre wilderness, new water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed only if enhancing to wilderness, if necessary to correct conditions imminently hazardous to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the Wilderness Act. In the remaining 3,640-acre area, water resource facility developments would be allowed without concern for wilderness values if in accordance with the MFP. There is potential for one spring development.

The mountains, which would comprise the 16,360-acre wilderness, would be closed to ORV use. About 1.5 miles of existing ways would not be available for vehicular use except in situations described for the All Wilderness Alternative. The remainder of the unit, including the existing gravel roads which border the WSA, would remain open to vehicular travel. The 2 miles of ways within the nonwilderness area would be open to ORV use.

Expansion of the Starr Springs Campground could be accomplished without regard for wilderness values. Twenty acres of temporary disturbance would be expected for access roads, picnic tables, camp sites, restrooms, and a water system.

Harvest of forest products in the 16,360-acre wilderness would not be allowed except for the harvest of pinyon nuts or the noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means for use in the designated area. The remaining 3,640 acres would be open to woodland harvest, but none is expected because historical use has been low and this is not expected to change.

Visual resources on the 16,360-acre wilderness area would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The remaining 3,640 acres would be managed as Class II on 2,900 acres, Class III on 331 acres, and Class IV on 409 acres, as outlined in the Henry Mountain MFP.

### • Action Scenario

BLM projects that 15 acres of surface disturbance would occur in the designated portion of the WSA as a result of locatable mineral activities as discussed in the All Wilderness Alternative including up to 3 miles of access roads. No exploration is projected on existing mineral leases in the designated portion. No new mineral leasing or mineral location would be allowed following wilderness designation. Therefore, no exploration of leasable minerals would occur and locatable mineral development would be restricted to existing mining claims at the time of wilderness designation. No rangeland, wildlife habitat, watershed projects or other developments are planned following wilderness designation.



It is projected that 60 acres of surface disturbance would occur in the nondesignated portion of the WSA. This would result from 40 acres due to locatable mineral activities as described in the No Action/No Wilderness Alternative including up to 7 miles of access roads and 20 acres from expansion of the Starr Springs Campground. It is estimated that 46 employees and 100 days would be used in exploration activities in the short term and up to 10 permanent jobs would be established with mineral development. No other rangeland, wildlife habitat, watershed projects, or other developments are planned in the nondesignated portion.

No disturbance from ORV use is projected in the designated area because of wilderness management restrictions. Vehicular traffic in the nondesignated area would continue to be restricted to 2 miles of existing ways and to future roads due to topographic constraints.

Recreational use is expected to increase over the current estimated use of 790 visitor days per year at a rate of 2 to 7 percent annually. Approximately 68 percent (currently 542 visitor days per year) would be vehicular-based recreation.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

### Wilderness Values

- Size

The Mt. Hillers WSA is approximately 20,000 acres in size. It is about 7 miles long, north to south, and 7 miles wide at its widest point.

- Naturalness

About 19,000 acres of this WSA are in a natural condition. On the other 1,000 acres, approximately 3.5 miles of way and the Starr Springs Campground detract from the WSA's naturalness. The ways are in the Cass Creek Peak area, north of Big Ridge, and at Ghost Ridge. The way at Ghost Ridge could be rehabilitated by natural processes. The ways are substantially unnoticeable.

In November 1988, unauthorized mining claim assessment work disturbed less than 0.2 acre on about 0.75 mile of an old trail beyond the cherry-stem in the vicinity of Cass Creek Peak. This site is being rehabilitated to a substantially unnoticeable condition.

- Solitude

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds.

The WSA consists of a large central peak with several prominent satellite peaks radiating away from the center on large ridges. These ridges are separated by at least 10 drainages reaching far up the mountain. Most of these are irregular in shape. On the mountain top, there is room for several groups to occupy proximate areas and be unaware of each other. Thick stands of spruce, fir, pine, and mountain mahogany on the north slope further screen users from each other.

Feelings of solitude and isolation are enhanced by the size and configuration of the WSA and the vistas of central Utah at the summit. Due to distance, topography, and vegetation, few, if any, marks of man are visible. One exception is the wildlife chaining projects on Coyote Benches outside the WSA.

Overall, opportunities for solitude are outstanding on 15,630 acres and less than outstanding on about 4,370 acres on the lower benchlands where there is limited topographic and vegetation screening.

- Primitive and Unconfined Recreation

Opportunities for primitive, unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the number of recreational opportunities present, and the quality of these opportunities. As discussed in the Recreation



# MT. HILLERS WSA

Table 1  
Summary of Environmental Consequences

Alternatives			
Resource	No Action/No Wilderness	All Wilderness (20,000 Acres)	Partial Wilderness (16,360 Acres) (Proposed Action)
Impacts on Wilderness Values	Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 116 acres because of locatable mineral exploration and development and campground expansion and would be indirectly reduced in quality on up to 2,000 acres. Class A scenery would be reduced in quality in some of the disturbed areas. Vehicular use of future mining roads and 3.5 miles of vehicular ways would detract from opportunities for solitude and primitive recreation in the WSA. Visitor use would be mostly motorized in nature and would detract from wilderness values.	Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 29 acres because of locatable mineral exploration and development and would be indirectly reduced in quality on up to an additional 600 acres. Special features would be preserved overall, although some Class A scenery would be reduced in quality. Visitor use would be primitive in nature and managed to protect wilderness values. Operation of the Starr Springs Campground would not be consistent with wilderness management goals.	Wilderness values would be preserved overall in the designated area which is approximately 82 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 75 acres of the WSA because of locatable mineral exploration and development, and indirectly reduced in quality on up to an additional 1,400 acres. Most of the impact would be in the non-designated area. Special features would be preserved with the exception that some Class A scenery would be reduced in quality. Vehicular use of 2 miles of ways in the non-designated portion would detract from opportunities for solitude and primitive recreation. Starr Springs Campground would be in the non-designated area and management and expansion would not conflict with wilderness management.
Impacts on Vegetation	The composition of vegetation types would be altered on less than 1 percent of the WSA and the viability of special status plant species would be maintained.	The vegetation types and special status plant species would be provided additional protection because the potential for surface disturbance would be reduced.	Vegetation types and special status plant species would receive additional protection on 82 percent of the WSA. Impacts on these resources from projected surface disturbance would not be significant because less than 1 percent of the WSA would be disturbed.
Impacts on Water Resources	This alternative would not alter present or future water quality and uses because most drainages are ephemeral and developments would be designed to mitigate or reduce erosion and sedimentation.	Wilderness designation may preclude development of additional water for the Starr Springs Campground, otherwise, it would not alter present or future water quality or uses.	Impacts and conclusions would be similar to those described in the No Action/No Wilderness Alternative because the degree and location of surface disturbance would be about the same.



# MT. HILLERS WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Alternatives			
Resource	No Action/No Wilderness	All Wilderness (20,000 Acres)	Partial Wilderness (16,360 Acres) (Proposed Action)
Impacts on Mineral and Energy Exploration and Production	<p>This alternative would not adversely affect mineral and energy resource exploration and production because mineral leasing, location of mining claims, and mineral developments would occur without restrictions for protection of wilderness values.</p>	<p>Wilderness designation would limit potential exploration and development opportunities for locatable minerals known to occur in the WSA to those under valid mining claims at the time of designation. Opportunities for production of significant amounts of locatable minerals would be foregone. Locatable minerals would be foregone.</p>	<p>This alternative would limit the potential exploration and development opportunities for locatable minerals in the designated area. Development would be limited to minerals under valid mining claims at the time of designation. Opportunities for production of significant amounts of locatable minerals would be foregone. No significant leasable mineral production would be precluded.</p>
Impacts on Wildlife Habitat and Populations	<p>There would be no significant impacts to wildlife habitat or populations. Approximately 1 percent of the crucial deer summer range or limited value year-long bison range in the WSA would be disturbed.</p>	<p>The wildlife species would be protected by this alternative and would benefit from additional solitude.</p>	<p>There would be no significant impacts to wildlife or populations because less than 1 percent (75 acres) of the WSA would be disturbed. Wildlife would receive additional protection and would benefit from solitude on 82 percent of the WSA.</p>
Impacts on Visual Resources	<p>Visual quality would be directly reduced in quality on 96 acres due to mineral-related disturbance and indirectly reduced in quality on up to an additional 2,000 adjacent acres.</p>	<p>Visual resources would be preserved overall by this alternative. Direct loss of visual resources would occur on 29 acres as a result of mineral activities. The quality of visual resources could be reduced on an additional 600 adjacent acres of the WSA where disturbance would be visible.</p>	<p>Visual quality would receive additional protection on 82 percent of the WSA. Visual quality on 15 acres in the designated area and 60 acres in the nondesignated area would be degraded with this alternative. Indirect reduction of visual quality would occur on up to 1,400 additional acres.</p>



# MT. HILLERS WSA

Table 1 (Continued)  
Summary of Environmental Consequences

Resource	Alternatives	
	No Action/No Wilderness	Partial Wilderness (16,360 Acres) (Proposed Action)
Impacts on Cultural Resources	<p>Inadvertent loss or damage to archaeological sites may occur due to surface disturbance and/or continued ORV use. Intentional vandalism and artifact collection may increase due to increased activity and accessibility. Cultural resources could be managed without restrictions for protection of other wilderness values.</p>	<p>Protection from most surface disturbance would probably outweigh any potential for increased vandalism. Closure to all vehicular access would protect sites from unintentional damage and decrease in accessibility in the unit.</p> <p>Eighty-two percent of the WSA including 12 recorded sites would receive protection as a result of wilderness designation. Over the long term, protection from most surface disturbance would probably outweigh increased potential for vandalism. The nondesignated area including nine recorded sites would continue to be protected by existing laws and regulations. Inadvertent loss or damage to archaeological sites may occur in this area due to surface development and/or continued ORV use.</p>
Impacts on Recreation	<p>Primitive recreation opportunities would be directly reduced in quality on 116 acres and indirectly reduced in quality on up to 2,000 acres more. Both primitive and vehicular recreational use would increase. Opportunities for mechanized-recreational activities would be improved with this alternative. The Starr Springs Campground could be expanded.</p>	<p>Primitive recreation opportunities would be preserved overall in the designated area. Primitive recreation opportunities would be directly reduced in quality on about 75 acres of the WSA and would be indirectly reduced in quality on up to an additional 1,400 acres. Both primitive and motorized recreational use would increase. The Starr Springs Campground would be in the nondesignated area and could be expanded without conflicts with wilderness management.</p>
Impacts on Economic Conditions	<p>Present economic conditions would not be affected. In the foreseeable future, economic conditions would be affected by increased employment of 80 jobs over a short period due to mineral exploration. Mineral development would increase employment by 15 permanent jobs which is less than 1 percent of the present Garfield County employment or 1.8 percent of the present Wayne County employment. Other economic conditions would not be affected.</p>	<p>Current economic conditions would not be significantly affected. Wilderness designation would result in temporary impacts on local economic conditions through a reduction of 56 short-term jobs and 10 long-term jobs in the locatable mineral industry that could be provided with the No Action/No Wilderness Alternative. Other economic conditions would not be significantly affected.</p> <p>Partial wilderness designation would result in temporary impacts on local economic conditions through a reduction of 34 short-term jobs and 5 long-term jobs that could be provided with the No Action/No Wilderness Alternative. Other economic conditions would not be significantly affected.</p>



## MT. HILLERS WSA

section, hiking opportunities are particularly challenging, with the summit of Mt. Hillers being the most difficult to reach in the Henry Mountains.

Opportunities for primitive, unconfined recreation are outstanding on 15,630 acres of the WSA. Portions of the WSA along the lower benchlands offer limited opportunities on approximately 4,370 acres.

- **Special Features**

The WSA has geological and scenic special features, including scenic views, a stand of old bristlecone pine trees, and geologic formations of stocks and laccoliths.

Mt. Hillers, a laccolith, is a huge structural dome (5 to 6 miles across) cut by several radial narrow, steep, V-shaped valleys separated by elongated, jagged ridges. Dip slopes and hogbacks formed from upturned sedimentary rocks (vertical in the Pink Cliffs area) flank the mountain.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (bald eagle and peregrine falcon) and one plant species (*Sclerocactus wrightiae*) listed as endangered or threatened. There are five other special status animal species and two other special status plant species that likely occur in the WSA. The WSA has populations of bison. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. Approximately 83 percent (16,608 acres) of the WSA is rated Class A for scenic quality.

- **Diversity**

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of Arizona pine forest, juniper-pinyon woodland, spruce, fir, and Douglas fir forest. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah; and Provo-Orem, Utah.

### **Air Quality**

This WSA is located in a PSD Class II area under the provisions of the Clean Air Act, as amended. Air quality is affected little from sources of pollution and is generally excellent. Visibility is generally excellent and can exceed 138 miles. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979).

### **Geology and Topography**

The Mt. Hillers WSA is located in the Canyonlands Section of the Colorado Plateau Physiographic Province. In general, this province is characterized by arid to semiarid climate, deep canyons, retreating escarpments, and gently dipping sedimentary rocks. The study area is located in and adjacent to the Henry Mountains and extends from the eastern flank of the Henry Basin to the western flank of Monument Upwarp.

The Henry Mountains were formed when mid-Tertiary diorite porphyry stocks and laccoliths were injected into the overlying sedimentary rocks, which range in age from Permian to Upper Cretaceous (Hunt, 1953). The Henry Mountains are generally considered by geologists to be a prime example for the study of laccoliths. Mt. Hillers is a major intrusive center within the WSA, and is bordered by an irregular zone of shattered rock. Several thousand feet of sedimentary rocks, ranging in age from Permian to Upper Cretaceous, were domed and faulted during emplacement. Surface exposures in the WSA consist of diorite porphyrys and steeply-dipping sedimentary rocks of the Chinle, Wingate, Kayenta, Navajo, Carmel, Entrada, Summerville, Cedar Mountain, Morrison, Dakota, and Mancos Shale (Upper Triassic to Upper Cretaceous).

The WSA is characterized by a rugged mountain peak, which rises approximately 5,000 feet above the surrounding plateau, reaching an elevation of 10,723 feet. Its steep slopes are broken by narrow, deep canyons. On the northeast side of the WSA, a satellite intrusion from the Mt. Hillers stock forms a table-like feature. Black Mesa (Black Table) is a nearly circular hill having a smooth, gently sloping top and precipitous sides about 600 feet high.



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## Soils

The general soils of this WSA are high mountain stony and gravelly loams with basically no existing accelerated erosion problems. Slopes vary from 4 to 70 percent with most averaging 30 percent. Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the glossary).

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	3,000	15	3,900
Slight	0.6	15,000	75	9,000
Stable	0.3	<u>2,000</u>	<u>10</u>	<u>600</u>
Total		20,000	100	13,500

Sources: USDI, BLM, 1978c and 1979c; Leifeste, 1978.

According to an unpublished soil survey conducted by the SCS in 1982, the soils in the Mt. Hillers WSA are nonsaline to slightly saline. The average annual salt production from soils within the WSA is approximately 8 lb per acre.

Rehabilitation potential over much of the WSA is poor. The WSA contains steep slopes with sandy, shallow soils where seeding establishment is difficult. However, some of the bench areas do contain acreage slopes soil type and depth which would be suitable for seeding establishment.

## Vegetation Including Special Status Species

Existing vegetation types are summarized on Table 3. Approximately 12 acres of riparian-type vegetation are located within the WSA. However, because it is a small type that crosses through other larger vegetation types, it is not identified individually in Table 3. Vegetation consists of big sagebrush and pinyon-juniper woodland at lower elevations on the south slopes of Mt. Hillers. On the cooler north slopes Ponderosa pine, Douglas fir, and bristlecone pine trees are found. The Henry Mountains are now considered the southeast limit for the Great Basin variety of bristlecone pine.

One endangered plant species, Sclerocactus wrightiae, may occur in the WSA. One Category 1 and two Category 2 candidate species also may occur in the

WSA. These are Pediocactus winkleri (which may be proposed for listing in the near future by FWS) Eriogonum cronquistii, and Spiranthes diluvialis (see Appendix 4 in Volume I).

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper woodland	5,625	28
Sagebrush	4,400	22
Douglas fir, aspen	3,585	18
Barren (rock outcrop, badlands)	3,000	15
Ponderosa pine	190	1
Desert shrub	<u>3,200</u>	<u>16</u>
Total	20,000	100

Source: USDI, BLM, 1983b

The Mt. Hillers WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler Ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 4.

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Arizona pine forest	3,000	15
Juniper-pinyon woodland	15,000	75
Spruce, fir, Douglas fir	<u>2,000</u>	<u>10</u>
Total	20,000	100

Source: USDI, Geological Survey, 1978.

## Water Resources

The Mt. Hillers WSA is located within the Dirty Devil River subbasin of the Upper Colorado River hydrologic subregion. All drainages within this WSA drains into the Dirty Devil River which in turn flows into Lake Powell.

This area is the headwaters of several streams including Copper Creek (1 mile), Benson Creek (0.50 mile), and Gold Creek (1.50 mile). The WSA is the recharge recovery area for three springs: Hole Spring, Starr Spring, and Lower Starr Spring (located on the boundary of the WSA). BLM has obtained from the State Engineers Office a water right (Certificate Number 10381) on Starr Spring for 0.008 cfs for public recreation, culinary, and stock water.



Future applications for appropriations would be made through State procedures.

This WSA is located within Water Rights Adjudication Area 95. Area 95 is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit. Temporary and fixed time applications over 0.015 cfs on the Dirty Devil River could be considered (UDNRE, DWR, 1988).

The water quality standard for the Dirty Devil River and tributaries, from Lake Powell to Fremont River, is Class 3C (protected from nongame fish and other aquatic life). The streams originating in the upper elevations of Mt. Hillers have not been classified by the State. However, BLM is managing them for the uses required for livestock and wildlife watering or Class 4.

Utah's 1986 305(b) Water Quality Assessment Report states streams and tributaries entering Lake Powell in the southern portions of the upper Colorado River drainage have impairments to their beneficial uses from high levels of TDS and sodium. These impairments result mainly from natural sources and low flows. There is little potential for wells or use of groundwater.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Mt. Hillers WSA is given in Table 5. Appendix 5 in Volume I describes the mineral and energy resource rating system.

The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would be present in only small amounts.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Coal	f2	c2	Small tonnages
Uranium	f3	c3	Between 500 and 1,000 metric tons
Gold	f2	c3	Less than 25 metric tons
Copper	f2	c3	Less than 50,000 metric tons

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

### • Oil and Gas

The WSA is considered to have a potential for small, widely scattered oil and gas pools (SAI, 1982). This rating is based on several factors: the WSA's location within the Paradox Basin, which has oil and gas production established to the east; the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of Pennsylvanian rocks within the basin and possibly reduced the reservoir pressure of any hydrocarbon traps within them; the presence of Tertiary intrusive bodies within the WSA; the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and the lack of any oil and gas production established from any of the oil and gas wells drilled in the area. It is indicated that, even though intrusive bodies are present, hydrocarbons may exist near the intrusions due to the limited metamorphism associated with them. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic-feet of gas (f2).

The WSA is rated as having a low potential for hydrocarbon accumulations due to the presence of the intrusive bodies (Molenaar, et al., 1983). The WSA is located in the Paradox Basin which does have oil and gas production established in its eastern portion. Oil accumulations are known within the Tar Sand Triangle located to the northeast of the WSA. It is possible that, if the oil exposed in the Tar Sand Triangle migrated up dip within the



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sedimentary strata, it may have been trapped in stratigraphic or structural traps in the vicinity of the WSA. Stratigraphic traps may be associated with algal mound buildups along the western portion of the Paradox Basin. Structural traps may have formed as a result of deformation of strata around intrusive bodies.

Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to yield significant quantities of hydrocarbons.

Based on the available information, the certainty of occurrence for oil and gas is rated low (c2), due to the general lack of well data and oil and gas shows in the area.

Under the current land use plan, 16,319 acres are in Category 1 (standard stipulations) and 3,681 acres are in Category 2 (special stipulations). There is presently one post-FLPMA oil and gas lease in the WSA, covering 640 acres.

- Coal

The majority of the coal in the Henry Mountains Basin lies west of the Henry Mountains. Important coal-bearing formations include the Emery and Ferron Sandstone Members of the Mancos Formation. Approximately 80 percent of the coal reserves of the basin are assigned to the Emery Sandstone Member. A portion of the Ferron Sandstone Member extends into the southwestern portion of the WSA. Only minor occurrences are reported from this member within the WSA (SAI, 1982). Due to the limited extent of coal-bearing formations in the WSA and poor exposures of the formation in the area, the tract was assigned a coal potential of (f2/c2) (small tonnages of coal, with low certainty that the deposits exists).

- Locatable Minerals

Portions of the area have been thoroughly prospected and studied geologically. There are approximately 383 mining claims, covering 7,660 acres.

- Uranium

Known occurrences of uranium and vanadium in the region are restricted to fluvial sandstones of the Salt Wash Member of the Upper Jurassic Morrison Formation and to fluvial sandstones of the

Chinle Formation. The Salt Wash Member is present in the WSA, except in the area underlain by intrusive rocks. The northeastern and southeastern parts of the WSA contain Salt Wash sandstones and carbonaceous, lacustrine mudstones at the surface or in the shallow subsurface (USDI, USGS, 1988). The carbonaceous mudstones are indicative of a favorable environment for uranium deposits. Uranium anomalies are associated with the Salt Wash Member in these parts of the WSA. The USGS has rated the eastern part of the WSA as having a high mineral resource potential for uranium.

The western portion of the WSA does not contain such favorable characteristics and its potential is rated moderate. Deposits may occur in the Shinarump and Monitor Butte Members of the Chinle Formation, based on the occurrence of an identified deposit in those members about 8 miles southeast of the WSA (USDI, USGS, 1988). The overall tract rating, based on SAI's rating system, is (f3/c3), a moderate degree of certainty that medium-sized deposits (500 to 1,000 metric tons of uranium oxide) exist in the study area.

- Gold and Copper

SAI (1982) rated the WSA (f2/c4) for gold, silver, and copper mineral resources. Further work by the USGS and USBM has been done subsequently. Geologic and geochemical studies indicate that the central part of the WSA has a moderate mineral resource potential for base metals (copper, lead, zinc) and gold (USDI, USGS 1988). A select sample from the Star Mine within the WSA assayed 2.07 percent copper, and 653 parts per billion (ppb) or 0.02 oz/ton of gold. Other samples from this area contained less than 1 percent copper and 400 ppb gold (USDI, USBM, 1987). Results from the geochemical study suggest that mineralization is localized near the contact of the Mt. Hillers stock and within the adjacent shattered zone (USDI, USGS, 1988). There is no active exploration or mining within the WSA. The WSA's rating is changed to (f2/c3) (there is moderate certainty that small deposits of gold and/or copper exist in the WSA).

- Salable Minerals

The only known or possible occurrences of salable minerals in the WSA are sand and gravel, and building stone. In addition, the granitic intrusives of Mt.



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Hillers provide a good source of aggregate. There are currently no salable minerals being removed from the WSA. The two potential markets for aggregate are Hanksville and Ticaboo; both are very small and meet their needs from sources closer than Mt. Hillers. Potential markets for the other salable minerals are also small, and there are available sources of supply closer than those in the WSA.

## Wildlife Including Special Status Species

Animals in the WSA include bison, mule deer, rabbit, squirrel, coyote, fox, and pika. Several species of birds are found along the water courses. Two endangered species, the bald eagle and the peregrine falcon, may occur in the WSA. In addition, five Category 2 candidate species may occur in the WSA: Great Basin Silverspot butterfly, ferruginous hawk, Mt. Ellen chipmunk, Mt. Ellen pocket gopher, and the white-faced ibis (see Appendix 4 in Volume I). No critical habitat has been identified in this WSA, but it does contain the following identified big game ranges: 3,250 acres of high priority deer summer range, 16,750 acres of crucial deer summer range, and 16,750 acres of limited value bison yearlong range. Current population estimates are 52 deer and about 20 bison within the WSA. The mountain is potential critical yearlong range for desert bighorn sheep if they become established in the area. Currently, there are no plans to transplant desert bighorn sheep into the WSA.

There are no wildlife management facilities in the WSA nor are there plans to develop any facilities or manipulate any habitat.

## Forest Resources

Timber acreage in this WSA includes approximately 85 acres of aspen, 3,500 acres of Douglas fir and mixed conifers, and 190 acres of Ponderosa pine. Bristlecone pine trees are found on the higher elevations of the WSA. All of the potential commercial timber acreage is on slopes in excess of 40 percent and, therefore, considered unharvestable (USDI, BLM, 1986). Limited access, low volumes, distance from market, and low demand also make commercial harvest unlikely. The management plan for the area (Henry Mountain MFP) recommends that there be no commercial timber sales. This recommendation was made to assist in preserving watershed, wildlife, and other resource values. There is no known present harvest of woodland products (fenceposts, firewood, etc.) from the 5,625 acres of pinyon pine and juniper trees.

## Livestock and Wild Horses/Burros

Most of the WSA is too steep and rocky for livestock use. Limited livestock use within the WSA occurs along the lower benches of Mt. Hillers. As shown in Table 6, portions of four allotments are permitted for an estimated 240 AUMs in the WSA.

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Pennell	56,367	14,060	2,594	93	530 Cattle 200 Sheep	06/01-10/31	4
Trachyte	51,597	2,000	2,853	67	292 Cattle 1,060 Sheep	11/01-05/31	3
Rockies	116,391	3,270	5,872	53	803 Cattle 1,343 Sheep	11/01-05/31	9
Bullfrog	82,546	670	3,442	27	449 Cattle 1,075 Sheep	11/01-05/31	5
Total	306,901	20,000	14,761	240			21

Sources: BLM File Data.



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This represents 2 percent of the AUMs of the four allotments involved. All four allotments are used by both sheep and cattle. No acreages within the WSA have been identified for vegetation manipulation for livestock benefits. There are 3.75 miles of fence and 1 mile of pipeline in the WSA.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Mt. Hillers WSA (USDA, APHIS, 1988).

There are no wild horses or burros inhabiting this WSA.

### Visual Resources

Scenic values are exceptional throughout the WSA. The high relief and variety of vegetation provide a strong contrast to the surrounding deserts and badlands. The north side is visible (background visual distance zone is greater than 5 miles) from U-95. The east side of the WSA is visible from U-276, and the west and south sides are visible from secondary travel routes all within the foreground-middleground visual distance zone (less than 5 miles).

The BLM VRM system rating for the WSA's visual characteristics are shown in Table 7. Appendix 7 in Volume I explains the BLM VRM system.

Table 7  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	16,608	83
Scenic Quality Class B	3,392	17
Scenic Quality Class C	<u>0</u>	<u>0</u>
Total	20,000	100
Management Class I	0	0
Management Class II	19,235	96
Management Class III	291	1
Management Class IV	<u>474</u>	<u>3</u>
Total	20,000	100

Source: USDI, BLM, 1982c.

### Cultural Resources

A total of 21 sites have been recorded in the WSA (USDI, BLM, 1988a). All 21 sites are prehistoric surface lithic scatters and most of them are located near active springs on the south-facing slopes of Mt. Hillers. Most of the sites are small in size and are only sparsely scattered with debitage and few lithic tools.

Two of the sites contain pottery sherds, but the cultural affiliation of the ceramics has not been ascertained. One of the sites contains partially buried fire hearths. No historic sites have been recorded in the WSA and none of the prehistoric sites are eligible for nomination to the National Register of Historic Places. Six inventories have been conducted in the WSA (USDI, BLM, 1988a). Three small linear surveys were completed within the unit, but only one site was identified. A University of Utah survey recorded 12 sites in the WSA; however, reliable estimates of site density cannot be made for the unit based on this study. Based on available information, numerous sites could probably be found associated with the unsurveyed springs in the WSA. Most of them would probably be small lithic scatters, but significant cultural resources may also be present.

### Recreation

A variety of recreational opportunities were identified within the WSA. These include dayhiking, geologic sightseeing, general sightseeing, backpacking, camping, nature study, and photography.

The WSA offers an outstanding opportunity for day hiking due to good access points and challenging terrain. Approximately 18 miles of hiking routes exist within the WSA; however, the overnight backpacker and camper may be restricted to shorter trips due to the configuration and size of the area that can be hiked.

The Pink Cliffs on the south side of Mt. Hillers are an outstanding site for geologic study. The area is easily accessible and dramatically illustrates the geologic forces that formed the Henry Mountains. There are also excellent scenic vistas from atop Mt. Hillers, including views of Lake Powell, the Little Rockies, and Mt. Pennell.

Based on field observation, current visitor use over most of the WSA for the activities above is estimated at 40 visitor days a year, mainly from hunting. The Starr Springs Campground is within the WSA boundary. This developed facility consists of 12 campsites, 15 picnic tables, 2 restrooms, access roads, and water system. Estimated annual visitor use for the campground is 750 visitor days. Of the total annual visitor days (790), approximately 68 percent (542 visitor days) is attributable to vehicular access on 3.5 miles of ways and in the campground, while the remaining 32 percent (248 visitor days) is attributable to primitive-type recreation.



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Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980. The species that account for the listed visitor days related to hunting within the Henry Mountain Resource Area are: bison (175 days) and deer (342 days).

## Land Use Plans

There are no rights-of-way, private land, or subsurface rights within the WSA. The WSA is BLM-administered public land. There are no State-owned lands in the WSA.

The Garfield County Master Plan (Five County Association of Governments, 1984) covers this WSA. The Master Plan recognizes that the county possesses "... some of the most spectacular scenery in the United States ... The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one FS unit be recommended for wilderness. The plan recommends that the remaining lands within the county, including the Mt. Hillers WSA, be retained for multiple uses. According to the plan, multiple use includes forestry, livestock grazing, mining, wildlife, and recreation. The Garfield County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under the BLM Henry Mountain MFP (USDI, BLM, 1982c) which generally allows for multiple use. Wilderness is not addressed in the Henry Mountain MFP. However, wilderness designation is part of the BLM multiple-use concept. BLM land use plans are linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

## Socioeconomics

### • Demographics

The WSA is located within Garfield County, one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 8 presents the baseline and projected population data for Garfield County. It is estimated

that between 1980 and 1987, population increased to about 4,085. Population projections for the county indicate that the number of people living in Garfield County in the year 2010 will be about 4,850 for about a 19-percent increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 8  
Baseline and Projected Population and Employment Growth  
Garfield County

	1980	1990	2000	2010
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200

Source: Utah Office of Planning and Budget, 1987.

The closest community to the WSA is Ticaboo. It is in Garfield County and about 18 miles south of the WSA but provides no services. Hanksville, a small community of approximately 350 people, located about 30 miles to the north in Wayne County, and Green River, approximately 95 road miles north of the WSA in Emery County, are the main gateway and service areas for visitors to the Mt. Hillers area.

### • Employment

Garfield County is one of the poorest counties in the State of Utah (South, et al., 1983). Table 8 shows the baseline and projected total employment for Garfield County to the year 2010.

Garfield County is part of the Southwest MCD. Table 9 shows the baseline (1980) and projected employment by source for the MCD to the year 2010.

Table 9  
Southwest Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	8,500	8,100
Nonfarm Proprietors	2,386	3,100	3,500	4,700
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.



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In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent).

Mining provided approximately 2 percent of the direct employment in the MCD.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to 18 percent, and mining will decline to less than 1 percent of the total MCD employment.

### • Sales and Revenues

Economic-related activities in the WSA include mineral claims, livestock production, and recreation. Table 10 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 10  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Oil and Gas Leases	None	\$1,280
Mining Claim Assessment	\$38,300	None
Livestock Grazing	\$4,800	\$370
Recreational Use	<u>\$3,239</u>	<u>\$910<sup>b</sup></u>
Total	\$46,339	\$2,560

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

<sup>b</sup>A few commercial permits have been issued for this area since 1980.

The WSA has 383 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Twenty-one livestock operators have a total grazing privilege of 240 AUMs within the WSA. If all this forage were utilized, it would account for \$4,800 of livestock sales and \$1,200 of ranchers' returns to labor and investment.

No woodland products are harvested from the WSA; therefore, woodland harvest does not contribute to the local economy.

The WSA's recreational use is relatively low. Related local expenditures are low and are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the State-wide average local expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Mt. Hillers WSA is estimated to be about 40 visitors per year over the general area and 750 visitors per year at Starr Springs, a BLM-operated campground.

The WSA generates Federal revenues from mineral leases and claims, livestock grazing, and recreation (refer to Table 10).

Oil and gas leases in the WSA cover 640 acres. At \$2 per acre, lease rental fees generate up to \$1,280 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 240 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$370 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

An average of \$910 in campground fees are collected at the Starr Springs Campground each summer. In addition, a few commercial recreation permits have been issued for this area since 1980.

### ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume IV. The following analysis is also based on implementation of the action scenarios presented in the Description of the Alternatives for the Mt Hillers WSA.



## No Action/No Wilderness Alternative

### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities (i.e., VRM Class II management on 19,235 acres).

In the foreseeable future, disturbance of approximately 96 acres from development of mining claims mainly in the west-central and southern portions of the WSA and disturbance of 20 acres from expansion of the Starr Springs Campground would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas. Most special features including geologic features, special status species, wildlife associated with wilderness, and bristlecone pine would not be significantly affected because the disturbance would be minor involving only 0.58 percent of the WSA and either the disturbance would not be located where the special features are located or mitigation would protect the features. Appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and impacts on these species would not be significant. Areas of Class A scenery would be reduced in quality by mining operations.

During the period of activity, the visual and audible disturbance from mineral exploration and development and campground expansion would indirectly reduce the quality of opportunities for solitude and primitive recreation and scenic values not only on directly disturbed areas but also on adjacent portions of the WSA. As much as 10 percent (2,000 acres) of the WSA could be so affected in the foreseeable future.

Because vehicular use would generally be limited by terrain to vehicular ways and mining roads, no additional disturbance from ORV activity is anticipated in the future. The continued and increased use of existing ways and future mining roads would detract from opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would be expected to significantly reduce wilderness

values because the additional use is expected to be largely vehicular in nature.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 116 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 2,000 acres. Class A scenery would be reduced in quality in some of the disturbed areas and areas adjacent to the disturbance.

### • Impacts on Vegetation Including Special Status Species

The projected disturbance of 116 acres (96 acres due to mineral exploration and development and 20 acres for expansion of the Starr Springs Campground) would not result in a major change in any vegetation type but could result in a loss of important ground-cover or wildlife habitat if located in areas of dense vegetation, critical slopes, or within riparian vegetation areas. Individual plants of the one endangered and four candidate species that may occur in the WSA could be disturbed by locatable minerals exploration and development. This situation would only exist where such minerals operations would occur on areas of less than 5 acres, where a plan of operations and approvals are not required under 43 CFR 3809. The Endangered Species Act and subsequent regulations apply to these operations and any losses would be inadvertent. It is not anticipated that mineral-related actions in the WSA would threaten the continued existence of any populations of special status plant species.

Prior to authorizing any surface-disturbing activities, BLM would require site-specific clearances of the potentially disturbed areas. If any special status species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of special status plant species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: Vegetation types and special status plant species would not be significantly affected.



## • Impacts on Water Resources

The WSA contains headwaters of several streams and is a recharge recovery area for three springs. Depending on the location of 96 acres of disturbance (related to mineral activities), short-term increases in TDS and sediment load of these streams could result. Over the long term, no significant sedimentation or change in TDS including salt would result from an increase of an estimated 260 cubic-yards of annual soil loss due to this disturbance. Because there are only 3 miles of streams in the WSA, it is unlikely that the disturbed areas would be in the vicinity of surface waters. The quality of surface waters would also be protected by requirements for mitigation such as holding ponds. The 20 acres of disturbance associated with expansion of Starr Springs Campground would not affect surface water quality because the drainages in this area are ephemeral.

Conclusion: The No Action/No Wilderness Alternative would not significantly alter water quality or uses.

## • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral exploration or production.

## • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, 16,750 acres of crucial deer summer range would not be protected by the application of the Wilderness Management Policy (BLM Manual 8560) with its reduced likelihood for surface disturbing and other activities. In addition, 116 acres of crucial mule deer summer range and/or limited value bison yearlong range could be subject to surface-disturbing activities. This acreage represents approximately 1 percent of the total crucial deer summer range within the WSA. The current deer population in the WSA is estimated at 52 animals (USDI, BLM, 1983b). The carrying capacity for deer would be reduced by approximately one animal.

The current number of bison utilizing the WSA is estimated at 20 animals (USDI, BLM 1983b and 1988b). The loss of 116 acres of forage from surface-disturbing and other activities would reduce the carrying capacity for the bison population by one animal within the WSA. In the long term, reclamation of the disturbed areas could result in slight increases in forage for bison.

There is a slight possibility that individual animals of the two endangered and five other special status species, that may occur in the WSA, could be disturbed by locatable minerals exploration and development. This would only exist where such mineral operations would occur on areas of less than 5 acres, where plans of operations and approvals are not required under 43 CFR 3809. The Endangered Species Act and subsequent regulations apply to these operations and any losses would be inadvertent. It is not anticipated that mineral-related actions in the WSA would threaten the continued existence of any of the special status animal species.

Prior to authorizing any surface-disturbance activities, the BLM would conduct site-specific clearances of the potentially disturbed areas. If any special status species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (refer to Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Because necessary measures would be taken to protect these species, the viability of populations of threatened, endangered, or other special status animal species would be preserved with the No Action/No Wilderness Alternative.

Conclusion: There would be no significant impacts to wildlife habitat or populations including special status animal species. Approximately 1 percent of the crucial deer summer range and/or limited value bison yearlong range would be disturbed.

## • Impacts on Visual Resources

Visual values in areas affected by the estimated 96 acres of surface disturbance from mineral and energy exploration and development would have to be considered within the VRM class objectives of the MFP. These include Class II, III, and IV areas. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period



of activity. VRM objectives would probably not be met in Class II but would probably be met in the Class III and Class IV areas. Even after rehabilitation, some permanent localized degradation would be expected. The quality of visual resources would be indirectly reduced on up to an additional 2,000 acres of the WSA from which disturbed areas could be viewed.

Expansion of the Starr Springs Campground by 20 acres would occur in a VRM Class III area and existing visual resources would not be significantly impaired by the development which would be designed to blend with the area.

Conclusion: Direct loss of visual quality would occur on 96 acres (less than 1 percent) of the WSA that would be disturbed by mineral-related activities and indirect loss would occur on up to an additional 10 percent (2,000 acres).

## • Impacts on Cultural Resources

The entire WSA would remain open to mineral location and leasing, thus eventually some development may occur in locations which contain significant cultural resources. It is estimated that approximately 116 acres of disturbance would occur in the foreseeable future. Some sites could be subject to disturbance or loss in areas where locatable mineral exploration and development occurs on areas less than 5 acres in size and not subject to regulations contained in 43 CFR 3809. However, sites in the WSA would continue to receive protection under existing Federal and State antiquities laws, and the probability of such mineral development occurring on or near cultural sites is low. Surface disturbance (including the expansion of the Starr Springs Campground) would be preceded by standard inventory and mitigation procedures; however, increased activity in these areas may provide opportunities for illegal artifact collection. In addition, buried sites that remain undetected upon surface inspection may be inadvertently damaged due to surface disturbance.

With this alternative all 20,000 acres of the WSA would remain open to ORV use and 3.5 miles of way would remain open to vehicular access. ORV activity does not currently constitute a significant use of the WSA and would not become important in the future due to topographic constraints. Although it is unlikely to occur, some cultural resources may receive unintentional damage as a result of ORV activity. In addition, general vehicular access to the unit may in-

crease artifact collection and vandalization opportunities (Nickens, et al., 1981).

With this alternative, archaeological sites would be subject to standard cultural resource management procedures (Neumann and Reinburg, 1988). Stabilization, interpretation, and excavation could proceed without the restrictions for wilderness values maintenance.

Conclusion: Loss or damage to archaeological sites may occur due to surface disturbance and/or continued ORV use.

## • Impacts on Recreation

Primitive recreational opportunities would be directly lost on 96 acres due to disturbance by mineral and energy activities and on an additional 20 acres due to the expansion of Starr Springs Campground. Primitive recreational opportunities would be indirectly reduced in quality in areas adjacent to the area of disturbance. As much as 2,000 acres would be so affected. However, roads and ways created for energy and mineral development would improve access into the area.

The future trend in recreational use of the WSA is unknown. However, based on a review of several projections (UDNRE, DPR, 1985; Utah Office of Planning and Budget, 1984; Cordell and Hundee, 1982; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 to 7 percent per year over the next 30 years. At this rate overall recreational use is expected to increase from 40 current visitor days to from 60 and 154 visitor days at the end of 30 years, mainly for hunting activities over most of the WSA. Motorized vehicles could be used for hunting on the 3.5 miles of ways in the WSA. These ways are presently used little, if at all, for other ORV travel.

Campground use at Starr Springs could increase from the current 750 visitor days per year to between 1,120 and 2,890 visitor days per year at the end of 30 years. The campground could be expanded by about 20 acres without regard to wilderness values. In summary, the total visitor days (790) currently estimated is expected to increase from between 1,180 and 3,044 visitor days at the end of 30 years. Approximately 68 percent would be vehicular based recreation while the remaining 32 percent would be primitive in nature.



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Conclusion: Primitive recreational opportunities would be directly lost on 116 acres and indirectly reduced in quality on up to an additional 2,000 acres more. Both mechanized and primitive recreational use would increase. Mechanized recreational opportunities, including camping at the Starr Springs Campground, would be improved with the No Action/No Wilderness Alternative.

- Impacts on Local Economic Conditions

Present economic conditions would not be affected. In the foreseeable future, there could be an increase of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. Employment of 80 people for locatable mineral exploration would increase total employment in Garfield County by 4 percent or Wayne County by 10 percent for a short-term period. Fifteen permanent jobs for locatable mineral development would increase the total employment of Garfield County by less than 1 percent or Wayne County by 1.8 percent over the long-term period. If the uranium potentials in the WSA were developed, it would lead to increases in population, employment, and income for Garfield and Wayne Counties.

There would be no livestock-related economic losses because the existing grazing use (240 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The 240 AUMs of forage use in the WSA would continue to produce \$4,800 annually in livestock sales and \$1,200 of ranchers' returns to labor and investment.

Recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 to 7 percent per year over the next 30 years. Because estimated recreational use in the area is projected to increase to between 1,180 and 3,044 visitor days per year over the next 30 years and overall recreation-related expenditures average only \$4.10 per visitor day, recreation-related expenditures attributable to the WSA would contribute from \$4,838 to \$12,480 to the economy each year.

Federal and State revenues would not be reduced by this alternative. There are 20,000 acres in the WSA, all open to oil and gas lease. If all this area were to be leased it would bring up to \$40,000 annually in Federal lease fee revenue. In addition, new royalties

from lease production could be collected by the Federal government if oil and gas were discovered. Half of these monies would be allocated to the State, a portion of which could reach the local economy. However, it is unlikely that this acreage would be leased on a long-term basis because of the low probability of oil and gas production.

Collection of livestock grazing fees (\$370 per year) would continue. Fifty percent of livestock grazing fees are returned to the local BLM office for use in rangeland improvement projects.

Conclusion: Economic conditions would be affected by increased employment (4 percent in Garfield County or 10 percent in Wayne County) over a short-term period due to mineral exploration. Minerals development would increase employment in Garfield County by less than 1 percent or Wayne County by 1.8 percent over a long period of time. Other economic conditions would not be affected.

### All Wilderness Alternative (20,000 Acres)

- Impacts on Wilderness Values

Designation and management of all 20,000 acres as wilderness would contribute to the preservation of the wilderness values in the Mt. Hillers WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 19,000 acres that meet and 1,000 acres that do not meet the naturalness criteria. Opportunities for solitude and primitive recreation would be protected on approximately 15,630 acres that meet and 4,370 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including Class A scenery, geologic features, special status species, wildlife associated with wilderness, and bristlecone pine, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of valid existing rights. In the foreseeable future, disturbance of up to 29 acres is anticipated from exploration and development of valid mining claims in the west-central and southern portions of the WSA. Mitigation to protect wilderness values would be applied, but direct loss of wilderness values would be allowed if development involving valid existing rights could not



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be otherwise achieved. Wilderness values of naturalness and opportunities for solitude and primitive recreation and scenic values would be lost on the disturbed areas. Opportunities for solitude and primitive recreation and scenic values would also be indirectly reduced in quality on adjacent portions of the WSA. As much as 3 percent (600 acres) of the WSA could be so affected. Most special features would not be significantly affected because the disturbance would be minor involving only 0.14 percent (29 acres) of the WSA and the disturbance would generally not be located where the special features are located. Some Class A scenery would be reduced in quality but less than what would be affected with the No Action/No Wilderness Alternative. Appropriate measures would be taken to protect special status species prior to any surface-disturbing activity, and impacts to these species would not be significant.

The Starr Springs Campground would not be expanded with this alternative, as its location inside the WSA is inconsistent with wilderness management goals as well as with objectives for management of the campground.

Vehicular use of existing ways would cease with ORV closure, improving opportunities for solitude and primitive recreation.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims. The potential for long-term development of existing mining claims is not accurately known but would be less with this alternative than with No Action/No Wilderness due to application of mitigation that would protect wilderness values subject to valid existing rights.

The gradual increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values.

Conclusion: Wilderness designation would preserve overall the wilderness values in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 29 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 600 acres. Special features would generally be preserved. Some Class A scenery which would be reduced in quality in the disturbed areas.

### • Impacts on Vegetation Including Special Status Species

The vegetation resource, including the special status species, would be provided with additional protection over the entire WSA. Prior to any surface disturbance (estimated 29 acres), BLM would require site-specific clearances as described in the No Action/No Wilderness Alternative. If necessary, consultation with FWS would be undertaken to comply with the Endangered Species Act and BLM policy. Therefore, because of the insignificant amount of surface disturbance and the required clearance, significant impacts to special status species are not projected.

Conclusion: The vegetation resource, including special status species, would be provided additional protection by the All Wilderness Alternative.

### • Impacts on Water Resources

Additional improvements or expansion of existing waters could not occur unless the work could be done in a manner nonimpairing to wilderness values. Development of additional water for the Starr Springs Campground may be precluded.

Conclusion: Wilderness designation may preclude development of additional water for the Starr Springs Campground; otherwise, it would not alter present or future water quality or uses.

### • Impacts on Mineral and Energy Exploration and Production

#### • Leasable Minerals

Approximately 640 acres are under a post-FLPMA oil and gas lease. No exploration or development of oil and gas is presently occurring within the WSA. The existing lease could be developed subject to the stipulations issued at the time of leasing. It is unlikely, however, that the existing lease will be developed or that a showing of commercial quantities will be made prior to their expiration date. No new leases would be issued.

Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of recoverable oil and gas resource.



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### • Locatable Minerals

Up to 1,000 metric-tons of uranium, 50,000 metric-tons of copper, and 25 metric-tons of gold could occur in the WSA. There are approximately 7,660 acres under mining claims (383 claims) within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. The maximum impact to minerals would be if the potentially recoverable minerals are not within mining claims filed before designation. In that case the potential for recovery of up to 1,000 metric-tons of uranium, 50,000 metric-tons of copper and 25 metric-tons of gold would be foregone. After that date, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Conclusion: Wilderness designation would limit potential exploration and development opportunities for locatable minerals known to occur in the WSA to those under valid mining claims at the time of designation. Opportunities for production of significant amounts of uranium, copper, and gold would be foregone.

### • Impacts on Wildlife Habitat and Populations Including Special Status Species

With this alternative, some wildlife could benefit due to the preservation of solitude and naturalness. Twenty-nine acres of crucial deer range could still be subject to surface disturbance associated with potential energy and mineral exploration and development. This acreage represents less than 1 percent of the total crucial deer range within the WSA.

The endangered and other special status species which may occur in the WSA would be provided with additional protection over the entire area. Prior to any surface disturbance (estimated 29 acres), BLM would require site-specific clearances as described in the No Action/No Wilderness Alternative. If necessary, consultation with FWS would be undertaken per the Endangered Species Act and BLM policy. Because of the insignificant amount of surface disturbance and the required clearances, no significant impacts to wildlife, including special status species, would occur.

Conclusion: Wildlife species including endangered and sensitive species would be provided additional protec-

tion from disturbance and would benefit from additional solitude.

### • Impacts on Visual Resources

The VRM Class would change from Classes II, III, and IV to Class I. That class generally allows only natural ecological change. The potential for surface-disturbing activities would be reduced to about 29 acres.

Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met on disturbed areas. Loss of visual quality would be perceived on as much as 600 surrounding acres as well. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims could not be denied, VRM Class I objectives might not be met on up to 600 acres of the WSA. Because the potential for development of all existing mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

Conclusion: Visual resources would be preserved overall by implementation of the All Wilderness Alternative. Visual values would be degraded due to exploration and development of locatable minerals on 29 acres. Loss of visual quality could be perceived on up to an additional 600 acres adjacent to the disturbance.

### • Impacts on Cultural Resources

Under this alternative all 20,000 acres would be withdrawn from mineral location and closed to leasing and sale. Except for an estimated 29 acres of disturbance resulting from development of existing mining claims, the WSA and all cultural resources in it would be completely protected from surface disturbance. In addition, archaeological sites would be protected from the secondary impacts resulting from increased access and activity in the area.

All 20,000 acres would be closed to ORV use, thus eliminating any possibility of inadvertent damage to cultural resources. Approximately 3.5 miles of ways would be closed to all vehicular traffic. The complete elimination of vehicular access to the WSA would indirectly help protect archaeological sites from intentional vandalism and artifact collection (Nickens, et al., 1981).



As primitive recreational use of the unit increases due to wilderness designation, site vandalism and collection of small transportable objects may increase. However, due to the lack of vehicular access collection of large artifacts and illegal excavation of sites may decrease. If sites containing valuable artifacts or specific features are present in the WSA, the increased inaccessibility of wilderness designation may encourage large scale commercial looting. No such sites have yet been identified in the WSA; however, some may be present. The protection of cultural resources from ORV activity and surface development would probably outweigh any increases in vandalism due to wilderness designation and increased recreational use.

All cultural resource management procedures would be subject to the restrictions of wilderness designation (Neumann and Reinburg, 1988). Access to sites for stabilization, interpretation, or excavation may be limited or denied.

Conclusion: Over the long term, protection from most surface disturbance would probably outweigh any potential for increased vandalism. Closure to all vehicular access would protect sites from unintentional damage and generally decrease accessibility in the unit.

- Impacts on Recreation

The WSA has outstanding primitive recreational values although current use is relatively low (about 248 visitor days per year). If designated, the outstanding opportunities for dayhiking, geologic study, and general sightseeing would be recognized, managed, and preserved. Motorized recreational use within the WSA (currently 542 visitor days) would not be permitted eliminating conflicts with primitive use. Primitive recreational use is expected to increase gradually (2 to 7 percent yearly) in response to Statewide population increases and current trends in recreational use. Publicity of the WSA likely following wilderness designation could also lead to an undetermined increase in primitive recreational use above the baseline rate for a short period of time. Management provided through a Wilderness Management Plan would control destructive increases in future primitive recreation use and the quality of the primitive recreation experience would be preserved.

Mineral-related surface disturbance on up to 29 acres could cause localized impairment of values. If roads for development of valid mining claims could

not be denied, the quality of primitive recreational opportunities would be reduced indirectly on as much as 600 additional surrounding acres. Mechanized use, maintenance, and expansion of the Starr Springs Campground would be precluded by the All Wilderness Alternative.

Approximately 3.5 miles of ways within the WSA would be closed to vehicular access. This would make hunting more difficult, but it is unlikely that use would drop off significantly.

Conclusion: Implementation of the All Wilderness Alternative could benefit primitive recreation by reducing the likelihood for surface-disturbing activities, eliminating motorized use, and increasing management attention and recognition of primitive recreational values. Mechanized maintenance or expansion of the Starr Springs Campground would be precluded and motorized use (currently 542 visitor days per year) would be eliminated.

- Impacts on Local Economic Conditions

Because of restrictions placed on the use of resources under wilderness designation, there could be losses in local income and Federal revenues currently provided by resource use in the WSA (Table 10), as well as loss of potential increases in income and Federal revenues that could occur under the No Action/No Wilderness Alternative.

There is potential for locatable mineral development in the WSA. Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action/No Wilderness Alternative. The short-term employment of 24 people for locatable mineral exploration and long-term employment of five people for mineral production represents a reduction of 56 short-term and 10 long-term jobs as compared to the No Action/No Wilderness Alternative. Because the potential for leasable mineral development is low, it is estimated that potential leasable mineral-related local income would not be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$4,800 annually of livestock sales



and \$1,200 of ranchers' returns to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use. Related local expenditures would be small (average of \$4.10 per visitor day Statewide).

There would also be a potential loss of \$40,000 annually in Federal revenues from the 20,000 acres that could be leased without designation. Even without wilderness designation it is unlikely that this acreage would be leased on a long-term basis because of low probability of oil and gas production.

Recreation-related Federal revenues could increase if the demand for commercial outfitter services increase. Presently, no commercial outfitters use the WSA on a regular basis.

**Conclusion:** Current economic conditions would not be significantly affected. Wilderness designation would result in temporary impacts to local economic conditions through a reduction of 56 short-term and 10 long-term jobs in the locatable mineral industry that could be provided with the No Action/No Wilderness Alternative. Other economic conditions would not be significantly affected.

### **Partial Wilderness Alternative (Proposed Action) (16,360 Acres)**

#### **• Impacts on Wilderness Values**

Wilderness designation of 16,360 acres would contribute to preservation of the area's wilderness values. This Partial Wilderness Alternative would reduce the potential for surface-disturbing activities that could impair wilderness values in the designated area. Protection in the designated area would include management under VRM Class I which generally allows for only natural ecological change, ORV closure including closure of 1.5 miles of ways, and closure to future mineral leasing and location. The area's best wilderness values would be protected. Naturalness (all 16,360 acres are natural and 15,630 acres meet the standards of outstanding), outstanding opportunities for solitude and primitive recreation, and special features, including Class A scenery, geologic features, special status species, wildlife associated with wilderness, and bristlecone pine, would be protected.

In the foreseeable future, direct loss of naturalness and opportunities for solitude and primitive recrea-

tion due to allowable surface disturbance from mineral exploration and development would occur on up to 15 acres within the designated portion and on up to 60 acres within the nondesignated portion. Loss of these values would be confined mainly to the west-central and southern portions of the WSA. Special features would be largely preserved because disturbance would involve only 0.4 percent (75 acres) of the WSA and development is generally not expected in areas where special features are located. Some Class A scenery would be reduced in quality, but less would be affected than with the No Action/No Wilderness Alternative. Wilderness designation would provide additional protection to special status species.

Sights and sounds from foreseeable development would indirectly reduce opportunities for solitude and primitive recreation on areas adjacent to the disturbed areas including up to 7 percent (1,400 acres) of the WSA. Most of this type of impact would be in the nondesignated area.

Elimination of vehicular use of 1.5 miles of ways in the designated area would improve opportunities for solitude and primitive recreation in that area, although vehicular use of 2 miles of ways and future exploration and mining roads in the nondesignated area would detract from these opportunities during the period of activity.

The gradual increase in visitor use that would occur would be expected to reduce wilderness values in the nondesignated area because the additional use is expected to be largely vehicular in nature.

Starr Springs Campground would be outside of the designated area, and management and expansion of the campground would not conflict with wilderness management objectives.

**Conclusion:** Wilderness values would be preserved overall in the designated area which is approximately 82 percent of the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 75 acres of the WSA, and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,400 acres. Some Class A scenery would be reduced in quality. Starr Springs Campground would be outside of the designated area, and management and expansion of the campground would not conflict with wilderness management objectives.



- Impacts on Vegetation Including Special Status Species

The impacts of the Partial Wilderness Alternative on vegetation resources would be essentially the same as described for the No Action/No Wilderness Alternative. There would be a total of 75 acres disturbed due to locatable mineral exploration and development (15 acres in the designated area and 60 acres in the nondesignated area). The vegetation resource in the designated portion of the WSA, including special status species, would be provided with the additional protection described in the All Wilderness Alternative. Because only 15 acres of surface disturbance is projected for the designated portion, no impacts to any major vegetation type or special status species would occur. In the nondesignated area, there is a potential that individual plants of the one endangered and two candidate species that may occur in the WSA could be disturbed on areas where locatable mineral exploration and/or development are projected. As described for the No Action/No Wilderness Alternative, required inventories and mitigation would prevent the loss of special status plant species. Although individual plants may be affected, such actions would not affect the continued existence of any of the special status species.

Conclusion: Impacts on vegetation types and special status plant species from projected disturbance would not be significant. These resources would receive additional protection on 82 percent of the WSA.

- Impacts on Water Resources

Depending upon the location of 75 acres of disturbance related to mineral exploration and development, short-term increases in TDS could result. However, over the long term, no significant change is expected.

Conclusion: No significant change in present or future water quality is expected.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

The area that would be designated wilderness would be placed in Category 4 status with no leasing. There are approximately 640 acres under a single post-FLPMA oil and gas lease in the WSA. Activities on this lease would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil or less than 60 billion cubic-feet of natural gas falls within the area that would be designated as wilderness under this alternative. However, it is concluded that, due to the small size of the potential deposits, the low certainty that they exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in a significant loss in recovery of the oil or gas resource.

- Locatable Minerals

It cannot be determined how much of the potential 1,000 metric-tons of uranium, 50,000 metric-tons of copper and 25 metric-tons of gold in the WSA fall within the area that would be designated as wilderness under this alternative. There are 5,740 acres of mining claims within the area to be designated. Development work, extraction, and patenting could continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). Because the areas with highest mineral potential would be designated wilderness, impacts on mineral and energy resources would be approximately the same as with the All Wilderness Alternative.

Conclusion: Development would be limited to minerals under valid mining claims at the time of designation and opportunities for production of significant amounts of locatable minerals would be foregone.

- Impacts on Wildlife Habitat and Populations Including Special Status Species

Animal populations would be provided with some benefits due to preservation of solitude and naturalness on the 16,360-acre designated area. With this alternative there would be a total of 75 acres disturbed due to locatable mineral exploration and development (15 acres in the designated area and 60 acres in the nondesignated area). The vegetation resource in the designated portion of the WSA, including special status species, would be provided with the additional protection described in the All Wilderness Alternative. Because only 15 acres of surface disturbance is projected for the designated portion, no impacts to any major vegetation type or special status species would occur. In the nondesignated area, there is a potential that



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individual animals of the two endangered and five other special status species which may occur in the WSA, could be disturbed on areas where locatable mineral exploration and/or development is projected. As described in the No Action/No Wilderness Alternative, due to required inventories and mitigation, the loss of special status species would not occur. Although individual animals may be affected, such actions would not affect the continued existence of any of the special status species.

**Conclusion:** Projected disturbance would not significantly impact wildlife habitat or populations including special status species. Wildlife would receive additional protection.

### • Impacts on Visual Resources

The impact on visual resources would be less than with the No Action/No Wilderness Alternative and slightly more than with the All Wilderness Alternative. In the portion recommended for designation, 15 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and could exceed VRM Class I management objectives. If roads for development of valid mining claims could not be denied, VRM Class I objectives might not be met on large portions of the designated area. An additional 60 acres in the nondesignated portion of the WSA would be disturbed and in some cases would not meet VRM Class II objectives. Twenty acres in a VRM Class III area would be disturbed with the expansion of the Starr Springs Campground. However, the campground would be designed to blend with the scenic values and no significant impacts would occur.

Indirect reduction in visual quality would occur on areas adjacent to the disturbance. As much as 1,400 acres of the WSA would be so affected.

**Conclusion:** Visual qualities in VRM Class I areas (15 acres in the designated area) and Class II areas (60 acres in the nondesignated area) would be degraded with the implementation of the Partial Wilderness Alternative. Indirect reduction in visual quality would occur on up to an additional 1,400 acres of the WSA.

### • Impacts on Cultural Resources

With this alternative, 12 of the recorded sites would receive protection from wilderness management in the 16,360-acre designated area. Site densities in the area proposed for wilderness designation may be

somewhat lower than the WSA as a whole because most of the known sites occur on the lower benches where springs are located.

Portions of these benches would not be included in the Partial Wilderness Alternative. In the designated area, only 15 acres of surface disturbance due to locatable mineral exploration and development is expected and impacts to cultural resources would probably be negligible. In addition, they would be protected by the 43 CFR 3809 regulations which require site-specific clearances and approval prior to any surface disturbance. In the 3,640-acre nondesignated area, some sites could be disturbed or lost where locatable mineral exploration and development occurs in areas less than 5 acres in size and not subject to the 43 CFR 3809 regulations. However, sites in the nondesignated area, including the nine known sites, would continue to receive protection under existing Federal and State Antiquities Law and the probability of such minerals development occurring on or near cultural sites is low. Surface disturbance (including the expansion of Starr Springs Campground) would be preceded by standard inventory and mitigation procedures; however, increased activity in these areas may provide opportunities for illegal artifact collection. In addition, buried sites that remain undetected upon surface inspection may be inadvertently damaged due to surface development.

All 3,640 acres and 1.5 miles of vehicle ways would remain open to vehicle use in the nondesignated area. However, ORV activity does not currently constitute a significant use of the WSA and would not become important in the future due to topographic constraints. Although it is unlikely to occur, some cultural resources may receive unintentional damage as a result of ORV activity. In addition, general vehicular access to the unit may increase artifact collection and vandalism opportunities (Nickens, et al., 1981).

**Conclusion:** About 82 percent of the WSA, including 12 recorded sites, would receive protection as a result of wilderness designation with this alternative. In the nondesignated area inadvertent loss or damage to archaeological sites may occur due to surface development and/or continued ORV use.

### • Impacts on Recreation

Impacts to recreational values and opportunities for the 16,360-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative and the quality of the primitive rec-



reational experience would likely be preserved in most of the WSA. Some loss of primitive values would occur with disturbance of 15 acres due to locatable mineral exploration and development. As primitive recreational use increases, commercial outfitters may start to utilize the wilderness.

Primitive values on the 3,640-acre nondesignated area would be reduced on 40 acres due to locatable mineral exploration and development and 20 acres due to expansion of the Starr Springs Campground. Indirect reduction in the quality of primitive recreational opportunities would occur on up to 1,400 additional acres.

Approximately 2 miles of ways within the WSA would be closed and 1.5 miles of ways would be open to ORV use. Little impact on ORV recreational use would be expected. Most of the motorized recreational use is centered around the Starr Springs Campground, which would not be subject to wilderness management restrictions.

Mechanized use and maintenance of the Starr Springs Campground is expected to increase. The campground could be expanded (20 acres) without regard to wilderness values.

Conclusion: The quality of primitive recreation opportunities would be directly reduced on about 75 acres and indirectly reduced on up to 1,400 acres more. Both primitive and motorized recreational use would increase and the Starr Springs Campground could be expanded.

## • Impacts on Local Economic Conditions

With partial designation there could be changes in current trends of population, employment, and local income distribution. The existing ability to explore and develop minerals would remain in the 3,640-acre nondesignated area. Employment of 46 people would increase total employment in Garfield County by 2 percent or Wayne County by 5 percent for a short period of time. This represents a 34-job decrease from the No Action/No Wilderness Alternative and a 22-job increase from the All Wilderness Alternative. The long-term employment of 10 people represents a 5-job decrease from the No Action/No Wilderness Alternative, but an increase of five jobs from the All Wilderness Alternative.

Because of restrictions placed on the use of resources under partial wilderness designation, there

could be slight losses in local income and Federal revenues currently provided by resource use in the WSA (Table 10), as well as loss of potential increases in income and Federal revenues that could occur under the No Action/No Wilderness Alternative.

The potential for oil and gas development in the WSA is low. Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the 16,360-acre designated portion of the WSA. As with the All Wilderness Alternative, precluding exploration and development of minerals would not alter existing economic conditions, but could reduce future economic conditions from what they would be with mineral development under the No Action/No Wilderness Alternative. Local income related to assessment of future mining claims on the 16,360-acre designated portion would be lost.

Livestock use and ranchers' income would continue as at present with \$4,800 annually of livestock sales and \$1,200 of ranchers' returns to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use. Related local expenditures would be small (average of \$4.10 per visitor day Statewide).

The loss of 640 acres now leased for oil and gas would cause an eventual loss of up to \$1,280 per year of lease fees to the Federal Treasury. In addition to these lease fees, any potential new lease fees and royalties from lease production on the 16,360-acre designated portion could also be foregone.

The 3,640-acre nondesignated portion of the WSA could contribute up to \$7,280 in Federal lease fees per year along with royalties if oil and gas are produced. However, it is unlikely that this acreage would be leased on a long-term basis because of the low probability of oil and gas development. Recreation-related Federal revenues could increase if the demand for commercial outfitter services increase. Presently no commercial outfitters use the WSA on a regular basis.

Conclusion: Economic conditions would be affected by provision of the short-term jobs (2-percent increase in employment for Garfield County or 5-percent increase for Wayne County) due to mineral exploration. Long-term economic conditions would be increased by 1 percent or less by the addition of 10



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permanent jobs due to locatable mineral development. Jobs provided with this alternative would be 34 potential, short-term jobs and 5 long-term jobs less, than with the No Action/No Wilderness Alternative.

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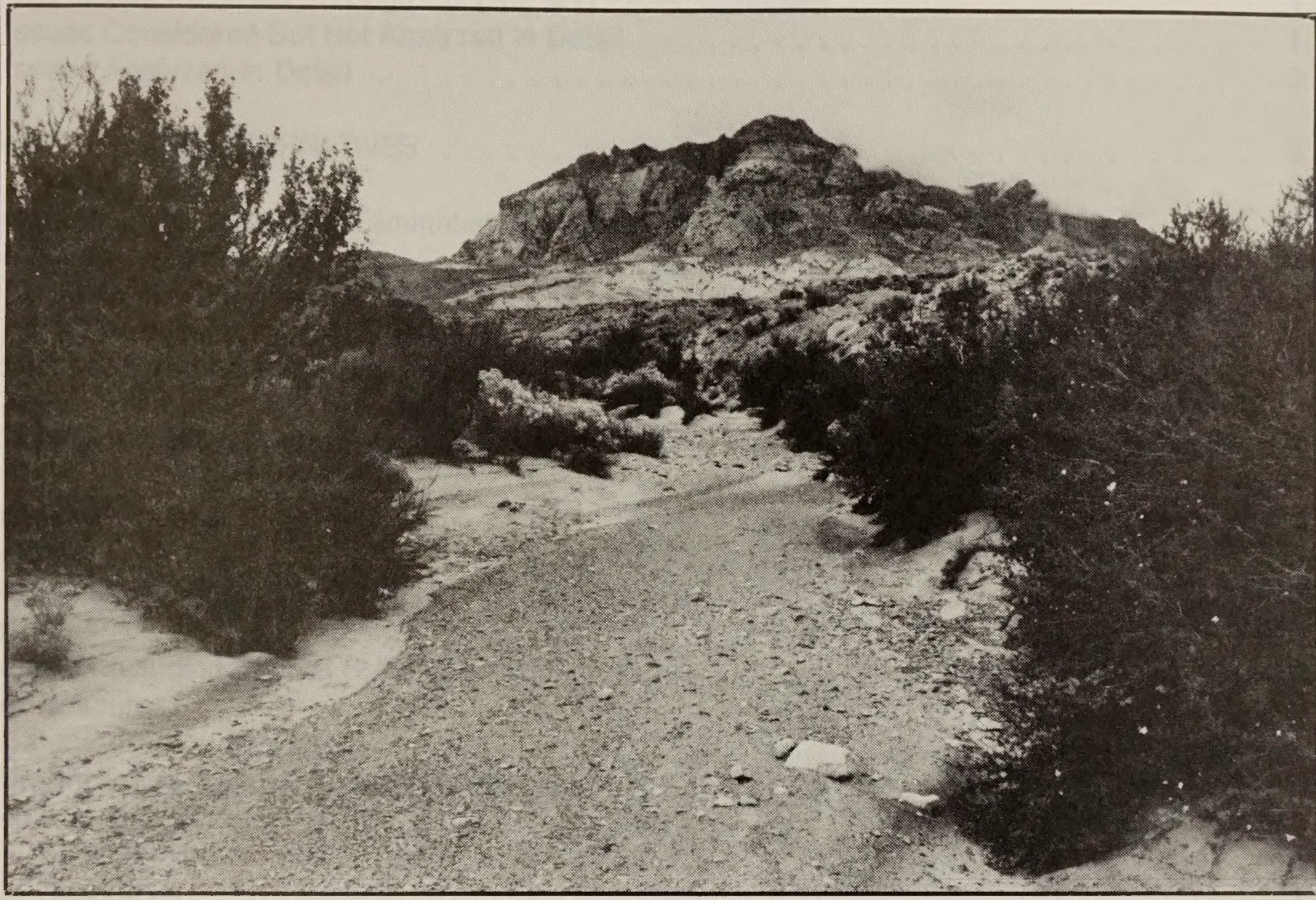








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# LITTLE ROCKIES WSA

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# LITTLE ROCKIES WSA

(UT-050-247)

## INTRODUCTION

### General Description of the Area

The Little Rockies WSA, which includes 38,700 acres of public land, is located in Garfield County, about 30 miles southeast of Hanksville and east of State Highways U-276 and U-95. It is also adjacent to the Glen Canyon NRA. The WSA is considered part of the Henry Mountains and contains Mt. Ellsworth (8,235 feet) and Mt. Holmes (7,930 feet). Elevations in the WSA range from 4,000 feet to 8,235 feet. Mean annual precipitation ranges from 5 inches at the lower elevations to 15 inches at the higher elevations. Depending on elevation and season, temperatures range from -20 degrees Fahrenheit (F) to 95 degrees F.

The Little Rockies area was designated as a National Natural Landmark in 1975 for its outstanding geologic features. Principal uses of the area include wildlife habitat, mineral exploration, recreation, and live-stock grazing.

The major vegetation types are pinyon-juniper woodland and blackbrush.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following changes specific to the WSA have been made since publication of the Draft EIS.

1. A portion of the boundary of the WSA (T. 35 S., R. 12 E.) has been redrawn to exclude State Section 2. This section is cherry-stemmed out of the WSA in the same manner as T. 34. S., R. 12 E., sec. 36. The text has been changed to reflect this deletion.

2. The anticipated surface disturbance presented in the Draft EIS (200 acres) was based on the assumption that all mineral and other resources potentially within the the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments received relative to the feasibility of development, the disturbance estimates have been revised to focus on activities projected to be feasible (see Appendix 6 in Volume I) in the foreseeable future. This resulted in a reduction of the projected surface disturbance from the 200 acres reported in the Draft EIS to 8 acres for the Final EIS.

### Specific Issues Identified Through Scoping and Public Comment

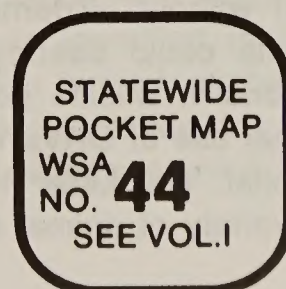
#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies, and impacts on water rights), the following issues or impacts specific to the Little Rockies WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Air Quality: The public has expressed concern that wilderness designation would lead to redesignation of WSAs from the existing Class II PSD classification, to the more stringent Class I rating. A PSD Class I area could restrict future industrial developments in and around the Little Rockies WSA. Since BLM's Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not cause the air quality classification to change. The decision to change air quality classification is the prerogative of the State of Utah, rather than BLM. In addition, the anticipated developments in the Little Rockies WSA are small and would meet the constraints of PSD Class II guidelines. Therefore, impacts on air quality are not analyzed in detail for the Little Rockies WSA.

2. Geology and Topography: The Little Rockies WSA contains excellent examples of porphyry stocks and laccoliths. The public has expressed concern that only wilderness designation can adequately protect these features. The only potential threats to these features would be blasting and surface disturbance on a scale much larger than any projects anticipated for the Little Rockies WSA. Therefore, impacts on geologic features are not significant issues for the Little Rockies WSA.

3. Soils: The public is concerned that without wilderness designation, mineral development, land treatment, or ORV use would occur on soils that are not





## LITTLE ROCKIES WSA

easily reclaimed, leading to unacceptable increases in soil erosion. Within the foreseeable future, the anticipated surface disturbance from mineral developments in the Little Rockies WSA without wilderness designation would be 8 acres and mitigation would be required through the unnecessary and undue degradation requirements of 43 CFR 3809. The entire WSA is currently closed to ORV use. In addition, terrain and surface features generally restrict vehicles and there are no existing ways or roads in the WSA. Therefore, impacts on soils are not significant issues for the Little Rockies WSA.

4. Vegetation Including Special Status Species: Estimates of total surface disturbance without wilderness designation have been revised downward from 204 acres reported in the Draft EIS to 8 acres in the Final EIS. Given this new scenario and the fact that the entire WSA is closed to ORV use, the impacts of direct disturbance of vegetation would be reduced and would not be significant with either alternative. With the No Action/No Wilderness Alternative there is a slight potential that individual plants of the one endangered and four other special status species that may occur in the WSA could be disturbed by locatable minerals exploration and development. This situation would only exist where such mineral operations would occur on areas of less than 5 acres, where a plan of operations and approvals are not required by the 43 CFR 3809 regulations. The Endangered Species Act and subsequent regulations apply to these operations and any losses would be inadvertent.

BLM would require site-specific clearances of the potentially disturbed areas prior to authorizing any surface-disturbing activities. If any special status species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, the viability of potential populations of special status species would be preserved. Therefore, impacts on vegetation are not significant issues for the Little Rockies WSA.

5. Wildlife Including Special Status Species: There is public concern that without wilderness designation, mineral developments could destroy wildlife habitat and lead to reductions in wildlife populations. There are also concerns that use of ORVs would disturb wildlife and destroy habitat. The Little Rockies WSA provides habitat for a variety of animal species, but pop-

ulations are low and no one species can be described as abundant. Because only 8 acres of disturbance is projected in the WSA in the foreseeable future and the entire WSA is presently closed to ORV use, wildlife habitats and populations would not be significantly affected.

With both the No Action/No Wilderness and All Wilderness Alternatives, there is a slight potential that individual animals of the two endangered and three other special status species that may occur in the WSA could be disturbed by locatable minerals exploration and development. This would only exist where such mineral operations would occur on areas of less than 5 acres, where a plan of operations and approvals are not required by 43 CFR 3809. The Endangered Species Act and subsequent regulations apply to these operations and any losses would be inadvertent.

BLM would require site-specific clearances of the potentially disturbed areas prior to authorizing any surface-disturbing activities. If any special status species are located, BLM would initiate consultation with FWS as required by the Endangered Species Act and BLM policy. BLM would request a biological opinion when appropriate (see Appendix 4 in Volume I). Appropriate mitigation measures, such as avoidance of sensitive areas, would be implemented. Therefore, impacts on habitat and populations of special status animal species are not significant issues for the Final EIS.

6. Forest Resources: The WSA contains 3,483 acres of pinyon-juniper and juniper woodland. Since the WSA is closed to ORV use, the use of the trees for fenceposts, firewood, or Christmas trees is not possible. Only 8 acres of disturbance are projected. Therefore, impacts on forest resources are not considered significant issues for the Final EIS.

7. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements, and placing restrictions on predator control. However, the Wilderness Management Policy (BLM Manual 8560) states that there will be no curtailments in livestock grazing simply because an area is wilderness.

There are no proposed rangeland developments which would be precluded by wilderness designation. Because the WSA is closed to ORVs and there are no



# LITTLE ROCKIES WSA

vehicular ways in the WSA, little effect on management of livestock is expected. For these reasons, impacts on livestock management are not significant issues for the Little Rockies WSA.

8. Visual Resources: As discussed above for vegetation, only 8 acres of surface disturbance are projected for the WSA in the Final EIS. Therefore, visual resources would not be significantly affected. Visual resources are not addressed in the Final EIS as a separate topic, but are addressed in relation to naturalness and special features in the Wilderness Values section.

9. Cultural Resources: Cultural resources could be destroyed by surface-disturbing projects, use of vehicles, or vandalism. However, the entire WSA is closed to ORVs and only 8 acres of mineral-related surface disturbance is projected. All sites in the WSA would continue to receive protection under existing Federal and State antiquities laws. Any surface disturbance would be preceded by standard inventory and mitigation procedures. Given these conditions, impacts on cultural resources are not significant issues for the Little Rockies WSA.

10. Recreation: The public has expressed concern that wilderness designation would change recreational use from motorized to primitive or, conversely, that without wilderness designation motorized recreation will eliminate or reduce opportunities for primitive recreation. Recreational use of the Little Rockies WSA is light (estimated 125 visitor days per year) and would remain primitive with or without wilderness designation due to the steep, rough terrain. Therefore, impacts on recreation are not considered significant issues for analysis in the Final EIS.

## • Issues Analyzed in Detail

The significant issues for the Little Rockies WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.
2. Impacts on water resources including water quality and uses.
3. Impacts on mineral and energy exploration and production.
4. Impacts on local economic conditions.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's assessments of wilderness values, visual resources, and mineral values.

See Volume VII-B for responses to General Comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section 44, for responses to Specific Comments about the Little Rockies WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated from Detailed Study

Alternatives that would add up to 2,137 acres of Federal and State lands on the north and south of the WSA were suggested in the public comments. These alternatives are not analyzed because the inclusion of State lands is not consistent with BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1).

### Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness; and (2) All Wilderness (Proposed Action) (38,700 acres). Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume IV are also applicable. A description of each alternative follows.

#### • No Action/No Wilderness Alternative


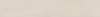




With this alternative, none of the 38,700-acre Little Rockies WSA would be designated by Congress as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Henry Mountain MFP (USDI, BLM, 1974). The two sections (1,280 acres) of State land within the WSA (see Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase. No private or split-estate lands are located in the WSA. The figures and acreages given are for Federal lands only.



# LITTLE ROCKIES WSA

## Map 1 LAND STATUS Little Rockies WSA UT-050-247

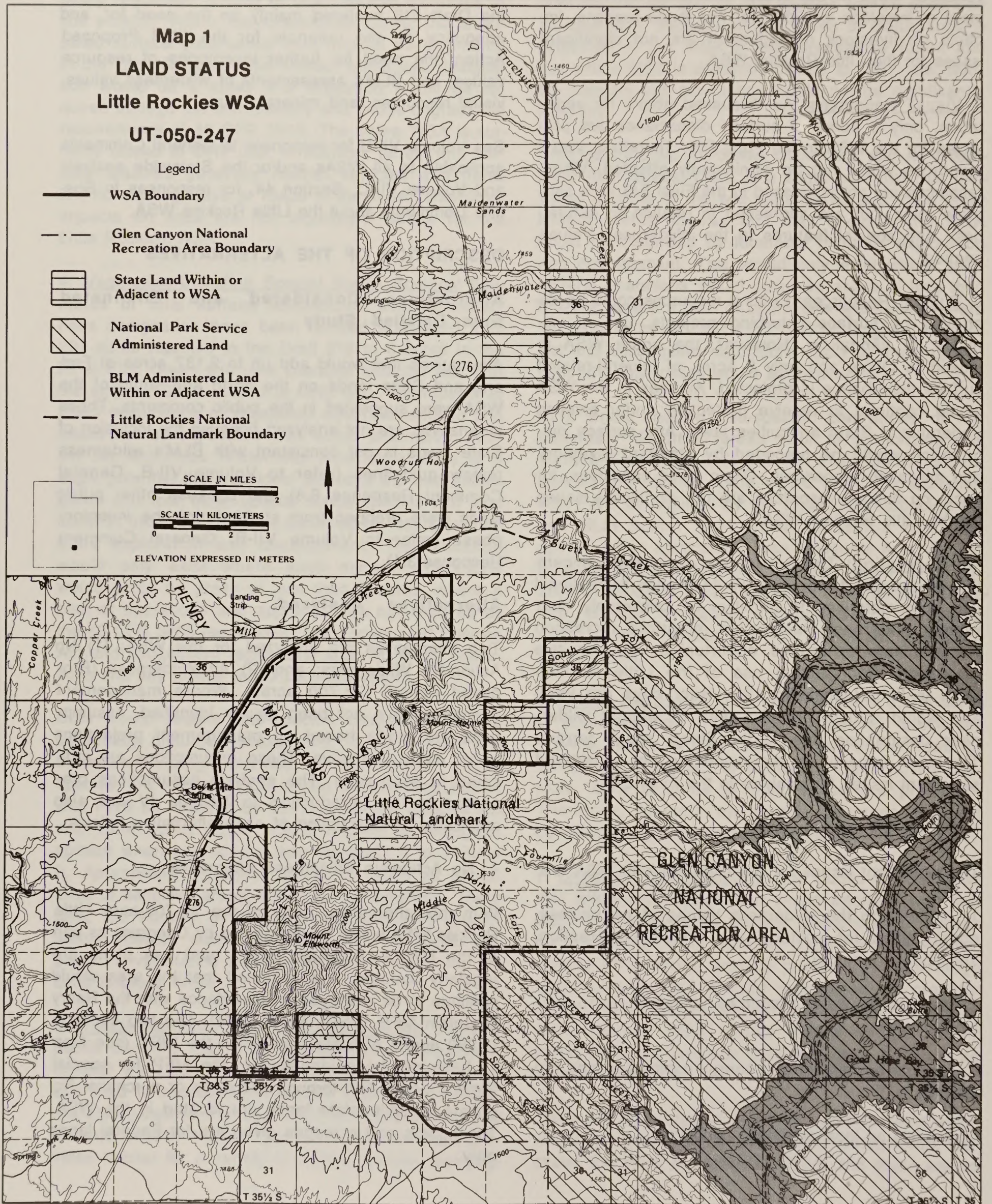
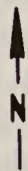
### Legend

-  WSA Boundary
-  Glen Canyon National Recreation Area Boundary
-  State Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  BLM Administered Land Within or Adjacent WSA
-  Little Rockies National Natural Landmark Boundary

SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS



R. 11 E.

R. 12 E.

R. 13 E.



# LITTLE ROCKIES WSA

- Management Conditions and Constraints

The Little Rockies WSA would be formally designated as an ACEC. A detailed management plan would be prepared prior to implementing the ACEC. Management prescriptions would include closure to ORVs and mineral leasing. Also, much of the area would continue to be managed as a National Natural Landmark because of its national significance as a geologic feature.

All 38,700 acres would remain open to mineral location and sale. Development work, extraction, and patenting would be allowed on 31 existing mining claims (620 acres) and potential future mining claims. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809), without consideration for wilderness values. There are no existing oil and gas leases, but future leases could be developed under Category 2 (standard and special stipulations) without concern for wilderness values on 4,480 acres. About 88 percent (34,220 acres) of the Little Rockies WSA has been closed to leasing (Category 4) to protect the scientific, wildlife, recreational, and geological values in the area. Implementation of the Henry Mountain MFP would continue the leasing restrictions, and no new oil and gas leases would be issued in that area. Although oil and gas leases could be issued on 4,480 acres, no leasable mineral exploration or development is projected because the level of known resources and the probability of their development are too low to support a development assumption (see Appendix 6 in Volume I for an explanation of mineral and energy exploration and development projections).

Domestic livestock grazing use of the WSA would continue as authorized in the Henry Mountain MFP (currently estimated at 687 AUMs). Use would continue to be confined to the margins of the WSA because of rugged terrain.

Public water reserve withdrawals on 120 acres would continue which segregate those lands from all public land laws and nonmetalliferous mineral locations.

The entire WSA acreage would continue to be closed to ORV use as documented in the Henry Mountain MFP.

The area would continue to be managed under VRM Class II on 38,060 acres and Class III on 640

acres. A communication facility located on Mt. Ellsworth would continue to be operated and maintained.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment, BLM projects that implementation of the No Action/No Wilderness Alternative would result in approximately 8 acres of surface disturbance in the foreseeable future. This disturbance would result from exploration and development of uranium and associated minerals in the southern half of the WSA. Exploration drilling would continue in both the White Canyon and Four Mile Canyon mining districts. To date, all exploration has been completed without building permanent roads and this would be expected to continue into the foreseeable future. Based on activities typical of the area, it is projected that eight employees and 20 days would be used in exploring the area in the foreseeable future. However, development of the uranium and associated silver in the White Canyon mining district would require up to 2 miles of permanent access roads and surface facilities to support underground mining operations. The operation would be small and would not exceed 15 permanent employees. The location of the surface facilities would be in a canyon and would not exceed 3 acres in size. Exploration and development activities would be under the unnecessary and undue degradation guidelines of the 43 CFR 3809 regulations. No development of leasable minerals is projected. No rangeland, wildlife habitat, watershed projects, or other improvements are planned in the WSA.

Due to the national significance of this area as geologic feature, much of the WSA would continue to be managed as a National Natural Landmark. BLM land use planning calls for formal designation of the area as an ACEC. The purpose of this designation would be to recognize the values in the area, and while allowing for locatable mineral development, place certain restrictions that would protect those values.

No disturbance from ORV use is projected because of continued management restrictions and topographic constraints.

Recreational use is expected to increase over the current estimated use of 125 visitor days at a



# LITTLE ROCKIES WSA

rate of 2 to 7 percent annually. No vehicular-based recreation is anticipated.

- All Wilderness Alternative (Proposed Action)

With this alternative, all 38,700 acres of the Little Rockies WSA would be designated by an act of Congress as part of the NWPS, (Map 2). It would be managed in accordance with the Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. The policy of the State of Utah is to reserve its position regarding exchange of in-held lands within any particular WSA (see Chapter 1 in Volume I). Based on this policy regarding exchange of State lands, it is projected that State lands would remain under existing ownership. There are two State sections (1,280 acres) within the WSA (see Map 1 and Appendix 3 in Volume I). There are no private or split-estate lands within the WSA and the figures and acreages given with this alternative are for Federal lands only.

- Management Conditions and Constraints

After wilderness designation, all 38,700 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 620 acres of existing mining claims that may be determined to be valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Oil and gas leases have been phased out and new leases would not be issued.

Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The estimated 687 AUMs in the WSA would remain available to livestock as presently allotted.

Public water reserve withdrawals on 120 acres would continue which segregate these lands from all public land laws and nonmetalliferous mineral location.

Desert bighorn sheep transplants have been made into the WSA by the UDWR. Future transplants of bighorn sheep would also be allowable with this alternative as long as wilderness protection criteria are met (refer to Appendix 1 in Volume I). The entire 38,700-acre area would continue to be closed to ORV use except for users with valid ex-

isting rights when approved by BLM in accordance with 43 CFR 8560.

Visual resources in the WSA would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. An exception would be a communication facility located atop Mt. Ellsworth which would continue to be operated and maintained as an allowed use.

- Action Scenario

BLM projects that a total of 3 acres of surface disturbance would occur. This disturbance would be the result of locatable mineral activities on existing mining claims, including 1 mile of access road, as described for the No Action/No Wilderness Alternative. The development would be small with no more than five permanent employees. No leasable mineral exploration or development is projected. Implementation of the All Wilderness Alternative would preclude new mineral location and mineral leasing. Therefore, following wilderness designation, no leasable mineral development would occur and locatable mineral development would be restricted to existing mining claims.

No disturbance from ORV use is projected because of wilderness management restrictions and topographic constraints.

Primitive recreational use is expected to increase over the current estimated use of 125 visitor days per year at the rate of 2 to 7 percent annually.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative State-wide analysis found in Volume I, as well as the Environmental Consequences of Alternatives in this WSA analysis.

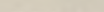
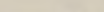
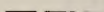
Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

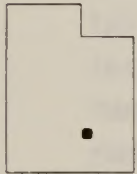


# LITTLE ROCKIES WSA

## Map 2 ALL WILDERNESS ALTERNATIVE Little Rockies WSA UT-050-247

### Legend

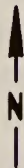
-  All Wilderness Alternative (38,700 acres)
-  Glen Canyon National Recreation Area Boundary
-  Little Rockies National Natural Landmark Boundary



SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS



T. 33 S.

T. 34 S.

T. 35 S.

R. 11 E.

R. 12 E.

R. 13 E.



# LITTLE ROCKIES WSA

Table 1  
Summary of Environmental Consequences

Alternatives	
Resource	No Action/No Wilderness
Impacts on Wilderness Values	<p>Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on less than 1 percent (8 acres) of the WSA because of uranium exploration and development and would be indirectly reduced in quality on up to an additional 1,935 acres of the WSA. Most special features would not be significantly affected. Class A scenery would be reduced in quality in the disturbed areas and Trachyte Creek could be dewatered. This alternative would not complement the NPS proposal for wilderness management in the contiguous portion of the Glen Canyon NRA. Water could be diverted from the Trachyte Creek upstream of the WSA and used for mining and irrigation.</p>
Impacts on Water Resources	<p>The 6 miles of Trachyte Creek in the WSA could be dewatered and water quality reduced during periods of flow.</p>
Impacts on Mineral and Energy Exploration and Production	<p>Implementation of this alternative would not adversely affect mineral and energy resource exploration and production beyond existing restrictions in the Little Rockies WSA.</p>
Impacts on Economic Conditions	<p>Present economic conditions would not be significantly affected. Over the foreseeable future, mineral activity would increase local employment by 15 jobs which is about 1 percent in Garfield County and about 1.8 percent in Wayne County.</p>
	<p>All Wilderness (38,700 Acres) (Proposed Action)</p> <p>Wilderness designation would preserve wilderness values overall in the WSA. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 3 acres because of uranium exploration and development and would be indirectly reduced in quality on up to an additional 774 acres. Special features would be preserved overall. Some Class A scenery would be reduced in quality in the disturbed areas. The flow of water through Trachyte Creek would be maintained. This alternative would complement the NPS proposal for wilderness designation in the contiguous portion of the Glen Canyon NRA.</p> <p>Development and use of water from Trachyte Creek for irrigation and mining could be hampered or restricted because changes in use, changes in points of diversion, or transfer of water rights could be protected by the Federal government to maintain flow through the wilderness.</p> <p>With this alternative, there would not be a significant loss of potential for oil and gas recovery. There is a potential for a loss of commercial deposits of locatable minerals. However, much of the uranium and associated mineral resource is currently under claim and, if valid, could be developed. Therefore, potential to produce an unknown but likely insignificant quantity of locatable mineral resources would be foregone.</p> <p>Over the foreseeable future, wilderness designation would not significantly affect local economic conditions. Benefits to the local economy from 10 mineral-related jobs would be eliminated by wilderness designation.</p>



# LITTLE ROCKIES WSA

## Wilderness Values

### • Size

This WSA is 38,700 acres in size, is approximately 17 miles long, and averages 4 miles wide. The WSA is adjacent to a NPS-proposed wilderness area of 35,000 acres. This combined acreage totals over 73,000 acres.

### • Naturalness

Most of this WSA is in a completely natural condition. Since establishment of the WSA approximately one-third of an acre has been disturbed due to uranium exploration and drilling. This area has been reclaimed to a substantially unnoticeable condition.

The only human intrusion is a NPS transmitter site atop Mt. Ellsworth which is permitted under the Wilderness Management Policy (BLM Manual 8560). The transmitter site occupies less than 1 acre and is maintained by helicopter. There are no human intrusions requiring rehabilitation. Overall quality of naturalness is considered high and meets the standards for naturalness set by the Wilderness Act.

### • Solitude

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) in the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds. As noted above, this WSA is large. The excellent vistas of Lake Powell and central Utah from the summits of Mt. Holmes and Mt. Ellsworth also assist in giving the visitor a sense of solitude. Numerous steep-walled, narrow canyons such as Four Mile, Two Mile, Maidenwater, and Trachyte provide topographic screening. Vegetation is sparse pinyon-juniper woodland and is not a factor in determining the degree of solitude. There are no sights and sounds outside the WSA that would interfere with a visitor's opportunity to find a secluded spot. Overall, the quality of opportunities for solitude were judged to meet the standards set by the Wilderness Act on 27,700 acres. Approximately 11,000 acres do not have outstanding opportunities for solitude.

### • Primitive and Unconfined Recreation

Opportunities for primitive, unconfined recreation were evaluated by considering miles of hiking routes in relationship to the WSA's size, the number of rec-

reational opportunities present, and the quality of these opportunities. This WSA was determined to have a diversity of recreational opportunities, including excellent opportunities for sightseeing, dayhiking, backpacking, camping, geologic study, and photography. Several interesting loop hiking routes are possible through challenging and varied terrain including both mountain peaks and canyons. Overall opportunities for primitive, unconfined recreation meet the standards set by the Wilderness Act on 27,700 acres. The remaining 11,000 acres do not meet the standards. The adjacent NPS-wilderness proposal enhances the outstanding primitive recreation opportunities in the WSA. For example, hiking routes continue down the drainages to Lake Powell.

### • Special Features

Because of the remote and isolated nature of portions of this WSA, there is high quality potential habitat for desert bighorn sheep. In January 1985, 21 desert bighorn sheep were introduced into the WSA by the UDWR. This has increased the ecological values of the WSA.

The area has historical values in that several archaeological sites have been identified, and there is a high potential for the discovery of additional sites.

Portions of this WSA were designated as a National Natural Landmark in 1975 because of the geologic values represented.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (bald eagle and peregrine falcon) and one plant species (Sclerocactus wrightiae) listed as endangered which may occur in the WSA. In addition, there are three special status animal species and two special status plant species that may also occur in the WSA. Refer to the Vegetation and Wildlife Including Special Status Species sections for additional information. Approximately 98 percent of the WSA is rated Class A for scenic quality. Trachyte Creek flows through the WSA for 6 miles.

### • Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV types of juniper-pinyon woodland and blackbrush. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV



# LITTLE ROCKIES WSA

types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah, and Provo-Orem, Utah.

## Air Quality

The Little Rockies WSA is a PSD Class II area under the provisions of the Clean Air Act as amended. The Capitol Reef National Park, located 16 miles to the west of the WSA, and the Canyonlands National Park, situated 23 miles northeast of the WSA, are PSD Class I areas. Air quality and visibility are generally very good to excellent in the WSA. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979).

## Geology and Topography

The Little Rockies WSA is located in the Canyonlands Section of the Colorado Plateau Physiographic Province. In general, this province is characterized by arid to semiarid climate, deep canyons, retreating escarpments, and gently dipping sedimentary rocks. The study area is located in and adjacent to the Henry Mountains. The WSA consists of high narrow plateaus and mesas separated by deep slickrock canyons in the north and east portions and the Little Rockies (Mts. Holmes and Ellsworth) in the south and west portions. Trachyte Creek, which cuts across the northern part of the WSA, is the only perennial stream within the area. Elevations in the WSA range from 4,000 feet to 8,235 feet.

## Soils

Soils in this WSA consist mostly of shallow sandy loams, shales, stony loams, and semi-desert talus. Fifty percent of the WSA has moderate to critical erosion conditions. Table 2 summarizes soil erosion condition for the WSA. Erosion condition was determined by using soil surface factors (terms are defined in the Glossary).

According to an unpublished soil survey conducted by the SCS in 1982, the soils in the WSA have a low salinity classification. It is estimated that undisturbed soils in the WSA have an average annual salt production of 130 lb per acre.

Over 50 percent of this WSA is unsuitable for rehabilitation due to steep slopes, shallow soils, and surface rock.

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	11,600	30	31,320
Moderate	1.3	7,700	20	10,010
Slight	0.6	13,600	35	8,160
Stable	0.3	<u>5,800</u>	<u>15</u>	<u>1,740</u>
Total		38,700	100	51,230

Sources: USDI, BLM, 1978c and 1979c; Lelliste, 1978.

## Vegetation Including Special Status Species

The predominant vegetation type in the WSA is blackbrush (27 percent). However, the majority of the WSA (55 percent) consists of rock outcrops which support little or no vegetation. Major vegetation types are summarized in Table 3.

Table 3  
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Barren (rock outcrop, badlands)	21,285	55
Blackbrush	10,449	27
Desert shrubs	3,483	9
Pinyon-juniper	1,935	5
Juniper	<u>1,548</u>	<u>4</u>
Total	38,700	100

Source: USDI, BLM, 1983b.

Small areas of riparian vegetation are found in wash bottoms and stream channels. The total acreage is small and riparian is not listed as a separate vegetation type in Table 3.

One endangered plant species, Sclerocactus wrightiae, may occur in the WSA. One Category 1 and three Category 2 candidate species also may occur in the WSA. These are Pediocactus winkleri (which may be proposed for listing in the near future by FWS), Eriogonum cronquistii, Spiranthes diluvialis, and Dalea epica (see Appendix 4 in Volume I).

The Little Rockies WSA is in the Colorado Plateau Province ecoregion as shown on the Bailey-Kuchler



# LITTLE ROCKIES WSA

ecosystems map (USDI, USGS, 1978). The PNV types of the WSA are listed on Table 4.

Table 4  
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	23,220	60
Blackbrush	15,480	40
Total	38,700	100

Source: USDI, USGS, 1978.

## Water Resources

The Little Rockies WSA lies within Lake Powell sub-basin of the Upper Colorado River hydrologic subregion.

The WSA contains one spring and several intermittent drainages totalling over 30 miles, all of which flow into Lake Powell. Trachyte Creek, the only perennial stream, originates upstream of the WSA but has approximately 6 miles of its course inside the WSA. Upstream uses on Trachyte Creek include a patented Desert Land entry, other patented land totalling 1,160 acres, and several uranium mining claims. There are two applications to appropriate water from Trachyte Creek. One is for 300 acre-feet (0.41 cfs), and another is for 3,000 acre-feet (4.1 cfs). Proof of use has been made for the 300 acre-feet and is pending for the 3,000 acre-foot application. BLM's measurements show the mean annual flow of Trachyte Creek to be 2.8 cfs. BLM protested allowance of an extension of time for the proof of use on the 3,000 acre-foot application but it was allowed. Allowance of the application for 3,000 acre-feet and final appropriation would essentially dewater Trachyte Creek. This WSA is within Water Rights Adjudication Area 95. Area 95 is only open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit (UDNRE, DWR, 1988).

The water quality standards for Trachyte Creek, a tributary of Lake Powell, are as follows: Class 2B (protected for boating, waterskiing, and similar uses), Class 3B (protected for warm water species of game fish and other warm water aquatic life), and Class 4 (protected for agriculture uses).

Utah's 1986 305(b) Water Quality Assessment Report states streams and tributaries entering Lake Powell in the southern portions of the Upper Colorado River drainage have impairments to their beneficial uses from high levels of TDS and sodium. These impairments result mainly from natural sources and low flows. The waters in the WSA have not been sampled for quality or quantity.

There are no wells nor is there any potential for underground water use. Generally, underground water sources are saline and not acceptable for human consumption.

## Mineral and Energy Resources

The energy and mineral resource rating summary for the Little Rockies WSA is given in Table 5. Appendix 6 in Volume I describes the mineral and energy resource rating system.

Table 5  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f3	c4	500 to 1,000 metric tons
Gold	f2	c2	Less than 100,000 troy ounces
Silver	f3	c3	Less than 5 million troy ounces
Copper	f2	c4	Less than 50,000 metric tons

Source: SAI, 1982; USDI, USGS, 1987; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA could contain deposits of copper, cobalt, nickel, and silver that are currently listed as strategic and critical materials (USDoD, 1988). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Cobalt and nickel are not reported from within the WSA, but are associated with uranium deposits in the area. Silver would be present in only small amounts.

### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.



## LITTLE ROCKIES WSA

- Oil and Gas

According to SAI (1982), the WSA is considered to have a potential for small, widely scattered oil and gas pools. This rating is based on several factors: (1) The WSA's location within the Paradox Basin, which has oil and gas production established to the east; (2) the presence of the Monument Upwarp, a broad Cretaceous uplift which has resulted in the exposure of the Hermosa Group within the basin; (3) the presence of Tertiary intrusive bodies within the WSA; (4) the possibility that any oil has migrated to the large oil impregnated rock deposit within the Tar Sand Triangle; and (5) the lack of any oil and gas production established from any of the oil and gas wells drilled in the area. The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic-feet of gas (f2).

The WSA has a low mineral resource potential for oil and gas based upon a possible low reservoir pressure in Pennsylvanian, Permian, and Triassic rocks, and the emplacement of the Henry Mountain intrusive bodies (Molenaar, et al., 1982; USDI, USGS, 1987). Industry indicates that, in the vicinity of the WSA, a moderate to high potential exists for oil and gas accumulations in Upper Paleozoic rocks. These deposits may be associated with stratigraphic traps. The WSA is located along the western margin of the Paradox Basin and it is possible that stratigraphic traps, such as algal mounds, could have formed in the vicinity of the WSA. Stratigraphic traps of this nature are difficult to locate in this region. When traps of this type are found, however, they may be expected to yield 3-5 million barrels of oil each from the basin. This type of oil and gas accumulation would be somewhat isolated from suspected low reservoir pressures in the area due to a lack of permeability between deposits.

Based on the available information, the certainty of occurrence for oil and gas is rated low (c2), due to the general lack of well data and oil and gas shows in the area. This rating applies more to the northern portion of the WSA due to the presence of intrusive bodies in the southern portion of the tract. According to the current land use plan, 4,480 acres are in Category 2 (special stipulations), and 34,220 acres are in Category 4 (closed to leasing). There are presently no oil and gas leases in the WSA.

- Locatable Minerals

Approximately 31 mining claims, covering 620 acres, presently exist in the WSA.

- Uranium

SAI (1982) rated the WSA as having a mineral resource potential of (f3/c3) for uranium resources. This rating is based primarily upon the WSA's location within the Chinle paleochannel system. Individual deposits within this system range in size from a few tons of ore to more than 800,000 tons having an average grade of 0.25 percent uranium oxide. More than 95 percent of these deposits contain less than 50,000 tons of ore. The WSA was given a moderate certainty rating due to the fact that uranium deposits and prospects occur in the area within formations that underlie the WSA (SAI, 1982). The USGS rated the southern portion of the WSA as having a high mineral resource potential for uranium occurrence with a very high certainty that uranium exists (USDI, USGS, 1987). This rating is based upon the presence of the commonly uranium-bearing Shinarump and Monitor Butte Members of the Chinle Formation; the projection of paleochannels trends of the Shinarump and Monitor Butte Members towards the WSA; the presence of authigenic dolomite and carbonaceous mudstone related to uranium mineralization; and the discovery of an identified subeconomic uranium resource within the WSA. The identified uranium resource was discovered by Texas Gulf in the late 1970s. It consists of a minimum of 200,000 metric-tons of mineralized rock with an average uranium content of 0.2 percent. Silver and copper were also found in association with the uranium (USDI, USGS, 1987). The identified uranium resource contains approximately 500 metric-tons of uranium oxide and the southern portion of the WSA is highly favorable for additional deposits.

Based on this information, the tract is rated (f3), with a potential for 500 to 1,000 metric-tons of uranium oxide occurring within the WSA. It contains a porous sandstone, a zone of readily leachable uranium, carbonaceous mudstone and authigenic dolomite occur in the vicinity. The certainty that uranium exists within the WSA is high (c4) as it is on trend with the White Canyon mining district and contains an identified subeconomic uranium resource.



## LITTLE ROCKIES WSA

- Gold, Silver, and Copper

The WSA has the potential for small, widely scattered gold mineralization associated with veins and shatter zones formed as a result of the intrusive body. Isolated anomalous values of metals were found in the stocks and stream sediment samples (USDI, USGS, 1987), indicating that some mineralization is present in the area. Due to the WSA's location outside of a known gold producing area, the lack of any prospect for gold in the vicinity of the tract, and general lack of metals production from the basin, the tract is assigned a favorability of (f2) (small deposits).

The certainty that gold occurs within the WSA is low (c2). Silver and copper are known to exist in association with uranium in the Four Mile Canyon deposit explored by Texas Gulf. In addition, the Henry Mountains are known to contain these elements in small quantities. Based on these factors, the WSA has a potential for 500,000 to 5,000,000 oz of silver (f3) and less than 50,000 metric-tons of copper (f2). The certainty that these resources exist in the WSA is moderate (c3) for silver and high (c4) for copper. Silver has not been reported previously in this type of deposit in the area, while copper has been commonly reported in association with uranium. Both have been reported as a result of exploration drilling in the WSA.

- Salable Minerals

There are no commercial deposits of salable minerals in the WSA. There are scattered deposits of sand and gravel on the western margin of the WSA. Sand and gravel are common in the area, and there are many deposits closer to existing and possible future market areas.

### **Wildlife Including Special Status Species**

There are no existing wildlife management facilities in the WSA nor have any potential facilities been identified within the WSA. There are no existing areas of vegetation treated to enhance wildlife habitat nor have any areas been identified for treatment within the WSA. Chukars, doves, and cottontails are the predominant game animals in the WSA.

There are no crucial big game habitats in the WSA. Deer numbers are currently very low. Several fur-

bearers, other small mammals, and birds inhabit the WSA. There are no fish within the WSA. In January 1985, UDWR reintroduced 21 desert bighorn sheep into the WSA. Two endangered species, the bald eagle and the peregrine falcon may occur in the WSA. In addition, three Category 2 candidate species may also occur in the WSA. These include the Great Basin Silverspot butterfly, ferruginous hawk, and white-faced ibis (see Appendix 4 in Volume I).

### **Forest Resources**

There are no present or potential commercial timber sites in this WSA. The area's inaccessibility and limited volumes of pinyon and juniper trees preclude economic utilization.

### **Livestock and Wild Horses/Burros**

Livestock use is confined to the margins of the WSA due to rugged terrain. The 10 permittees use horses to herd and manage cattle. No areas within the WSA have been identified for vegetation manipulation projects for livestock benefit. Two allotments are permitted for an estimated 687 AUMs in the WSA. This represents 7 percent of the AUMs of the allotments involved (refer to Table 6).

The Little Rockies allotment is a rough unallotted area that is not used by livestock. There are no livestock support facilities in the WSA.

There are no wild horses or burros within the WSA.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Little Rockies WSA (USDA, APHIS, 1988).

### **Visual Resources**

Scenic quality is exceptional throughout the WSA. There is a good variety of landform and colorful rock formations which contrast with the surrounding desert and the water of Lake Powell.

Most of the west side of the WSA is clearly visible from Highway U-276, a major travel route which carries up to 190,000 visitors a year to Lake Powell. The east side is visible to boaters on Lake Powell. The BLM Visual Resource Evaluation System rated the WSA's visual characteristics as shown in Table 7. The BLM VRM system is explained in Appendix 7 in Volume I.



# LITTLE ROCKIES WSA

Table 6  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Rockies	116,391	26,120	5,872	518	803 Cattle 1,343 Sheep	11/01-05/31	8
Trachyte	51,597	3,480	2,853	169	292 Cattle 1,060 Sheep	11/01-05/31	2
Little Rockies	29,475	9,100	85	Unallotted			
Total	197,463	38,700	8,810	687			10

Sources: BLM File Data.

Table 7  
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality Class A	38,060	98
Scenic Quality Class B	0	0
Scenic Quality Class C	640	2
Total	38,700	100
Management Class I	0	0
Management Class II	38,060	98
Management Class III	640	2
Management Class IV	0	0
Total	38,700	100

Source: USDI, BLM, 1982c

## Cultural Resources

A total of 16 sites have been recorded in the WSA (USDI, BLM, 1988a). Most of these are prehistoric surface lithic scatters. One lithic scatter contains ceramics of Fremont origin and the remains of a semi-subterranean structure. Two rockshelters have been recorded in the WSA; one contains Archaic-aged projectile points and the other contains Basketmaker or Pueblo ceramics. One site consists of a series of steps carved into the slickrock of a small canyon. Most sites in the WSA are located on mesa and hill tops, in small drainages, or near springs. None of the recorded sites have been sufficiently evaluated to determine National Register eligibility. No historic sites have been recorded in the WSA and no formal inventory work has been conducted. The potential for finding additional sites, especially small lithic scatters, is probably high.

## Recreation

Fifteen recreational opportunities were evaluated for their quality in this WSA. Thirteen opportunities were present in varying degrees. Six opportunities (backpacking, camping, dayhiking, photography, geologic study, and general sightseeing) are considered outstanding in quality. A summary of selected activities follows.

Dayhiking, camping, and backpacking opportunities are excellent because of the WSA's large size, good access, the presence of an adjacent wilderness proposal in the Glen Canyon NRA, and the general variety of features found in the WSA. Hiking routes total over 40 miles in the WSA, with at least an additional 20 miles in the adjacent NRA. Extended trips are possible down the Trachyte drainage, either directly from Highway U-276 or via either Mt. Holmes or Mt. Ellsworth. Several large slickrock side canyons east of these peaks offer excellent opportunities for exploring. This WSA probably has more potential for loop trips than any other WSA in the Henry Mountain Resource Area. Boat shuttles on Lake Powell are also possible. Outstanding views of Lake Powell are possible from Mt. Holmes and Mt. Ellsworth. Wildlife observation opportunities have increased in the WSA due to the reintroduction of desert bighorn sheep in January, 1985. The Little Rockies were designated as a National Natural Landmark in 1975 because of the geologic significance.

Visitor use in the WSA is estimated at 125 visitor days per year and all recreational use is primitive in nature. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been



# LITTLE ROCKIES WSA

issued since 1980. ORVs are used rarely, if at all, in the WSA. The entire WSA is presently closed to ORV use and there are no vehicular ways.

## Land Use Plans

The WSA is BLM-administered public land except for two State sections (1,280 acres). The current State-of-Utah policy is to maximize economic returns from State lands and to reserve its position regarding exchange of in-held lands. In 1986, the Utah State Legislature passed S.C.R. No. 1 opposing any additional wilderness designation in Utah and urging that State lands not be exchanged out of wilderness areas. Of the 1,280 acres of in-held State land, 640 acres are under lease for grazing.

With the exception of a small radio repeater site on the summit of Mt. Ellsworth, there are no rights-of-way in the WSA. There are no private in-holdings, nor are there any Federal lands with non-Federal subsurface rights in the WSA.

The Garfield County Master Plan (Five County Association of Governments, 1984) covers this WSA. The master plan recognizes that the county possesses "... some of the most spectacular scenery in the United States ... The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one FS unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Little Rockies WSA, be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation. The Garfield County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The Glen Canyon NRA Wilderness Recommendation (USDI, NPS, 1974) includes a proposed wilderness unit contiguous to this WSA.

The Little Rockies is managed under the BLM Henry Mountain MFP (USDI, BLM, 1982c) which allows multiple use with certain restrictions on oil and gas and ORV use, as discussed in the description of the No Action/No Wilderness Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Wilderness designation is part of the BLM multiple-use concept. The BLM land use plan is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative.

## Socioeconomics

### • Demographics

The WSA is located in Garfield County, one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Garfield County grew from 3,157 to 3,700, an overall increase of about 17 percent. Table 8 presents the baseline and projected population data for Garfield County. It is estimated that between 1980 and 1987, the population increased to about 4,085. Population projections for the county indicate that the number of people living in Garfield County in the year 2010 will be about 4,850 for about a 19 percent-increase over 1980 levels (Utah Office of Planning and Budget, 1987).

Table 8  
Baseline and Projected Population and Employment Growth  
Garfield County

	1980	1990	2000	2010
Population	3,700	4,250	4,350	4,850
Employment	2,156	2,000	2,200	3,200

Source: Utah Office of Planning and Budget, 1987.

The closest community to the WSA is Ticaboo, about 20 road miles south, also in Garfield County. Ticaboo had a 1980 population of about 300. Since 1980 the population has declined and services are no longer available. Hanksville (a small community of approximately 350 located about 35 road miles north of the WSA) and Green River (approximately 100 road miles north of the WSA in Emery County), are main gateways and service areas for visitors to the Little Rockies WSA.

### • Employment

Table 8 shows the baseline and projected total employment for Garfield County to the year 2010.

Garfield County is part of the Southwest MCD. Table 9 shows the baseline (1980) and projected employment by source for the MCD to the year 2010. In 1980 the leading employment sectors for the Southwest MCD were government (23 percent), trade (20 percent), and nonfarm proprietors (12 percent).



# LITTLE ROCKIES WSA

Mining provided approximately 2 percent of the direct employment in the MCD.

Table 9  
Southwest Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	1,810	1,700	1,600	1,500
Mining	499	300	300	400
Construction	1,308	1,700	2,300	3,100
Manufacturing	1,498	2,000	2,600	3,300
Transportation, Utilities	1,006	1,300	1,800	2,500
Trade	4,120	6,800	8,800	11,200
Finance, Insurance, Real Estate	785	1,100	1,400	1,800
Services	2,184	5,100	6,900	8,900
Government	4,616	5,800	6,500	8,100
Nonfarm Proprietors	<u>2,386</u>	<u>3,100</u>	<u>3,500</u>	<u>4,700</u>
Totals	20,212	28,900	35,700	45,500

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Beaver, Garfield, Iron, Kane, and Washington Counties.

It is projected that by the year 2010, employment in the MCD will more than double. Services will increase to 20 percent and trade to 25 percent of the total. Agriculture will decline to 3 percent, government to 18 percent, and mining will decline to less than 1 percent of the total MCD employment.

## • Sales and Revenues

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 10  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Mining Claim Assessment	\$3,100	0
Livestock Grazing	\$13,740	\$1,058
Recreational Use	<u>\$512</u>	<u>Unknown<sup>b</sup></u>
Total	\$17,352	\$1,058

Sources: USDI, BLM, 1982a; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

<sup>b</sup>A few commercial permits have been issued since 1980.

The WSA has 31 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of the claims are current in assessment work.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Twelve livestock operators have a total grazing privilege of 687 AUMs within the WSA. If all this forage were utilized, it would account for \$13,740 of livestock sales and \$3,435 of ranchers' returns to labor and investment.

The WSA's recreational use is low and related local expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that the Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Little Rockies WSA is estimated to be about 125 visitor days per year.

The WSA generates Federal revenues from livestock (Table 10).

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 687 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$1,058 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume IV. The following analysis is also based on implementation of the Action Scenarios presented in the Description of Alternatives for the Little Rockies WSA.



# LITTLE ROCKIES WSA

## No Action/No Wilderness Alternative

### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness under this alternative, the identified wilderness values would not receive the degree of protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). Wilderness values in the WSA would be somewhat protected by limitations placed on potential surface-disturbing activities i.e., VRM Class II management on 38,060 acres, management under oil and gas leasing Category IV closed to leasing on 34,220 acres, ORV closure limitations on 38,700 acres, and designation and management of the area as an ACEC.

In the foreseeable future, disturbance of approximately 8 acres from development of uranium mining claims in the southern portion of the WSA would result in a direct loss of naturalness and opportunities for solitude and primitive, unconfined recreation in the disturbed areas.

Some special features, including cultural values, geologic features, special status plant and animal species, and wildlife associated with wilderness, would not be significantly affected because the disturbance would be minor involving only 0.02 percent of the WSA. In addition, appropriate measures would be taken to protect cultural values and special status species prior to any surface-disturbing activity. Class A scenery would be reduced in quality in the disturbed areas, but the majority of the scenery would be unaffected. Trachyte Creek could be dewatered from upstream uses.

During the period of activity, the visual and audible disturbance from mineral exploration and development would reduce opportunities for solitude and primitive recreation not only on directly disturbed areas but also indirectly on adjacent portions of the WSA. As much as 5 percent (1,935 acres) of the WSA could be so affected in the foreseeable future.

Future vehicular use would be limited by terrain and ORV closure to future mining roads and no disturbance from ORV activity is anticipated.

The gradual increase in visitor use that would occur would not reduce wilderness values because the additional use would be primitive in nature and the WSA is large enough to adequately incorporate the additional use.

This alternative would not complement or enhance the NPS proposal for wilderness designation and management of the contiguous portion of the Glen Canyon NRA.

Conclusion: Wilderness values would not be protected by wilderness designation and loss would occur as intrusions increase. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 8 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 1,935 acres. Most special features would not be significantly affected. Class A scenery would be reduced in quality in disturbed areas. Trachyte Creek could be dewatered by upstream uses.

### • Impacts on Water Resources

The WSA is headwaters for one spring and several small intermittent streams. Trachyte Creek, the only perennial stream, originates upstream from the WSA but flows through it for approximately 6 miles. Trachyte Creek has a potential to be dewatered through upstream uses including irrigation for private land and mining. Should this occur, the riparian vegetation would be affected and because of the values of the upstream uses, the quality of water flowing through the WSA would be reduced from upstream uses.

Conclusion: Water could be diverted from Trachyte Creek upstream of the WSA and used in mining and irrigation. Six miles of Trachyte Creek in the WSA could be dewatered and water quality reduced during periods of flow.

### • Impacts on Mineral and Energy Exploration and Production

The WSA would remain open to exploration and development of mineral and energy resources without consideration of wilderness values. Therefore, mineral and energy resources would not be affected by the No Action/No Wilderness Alternative.

Conclusion: Implementation of the No Action/No Wilderness Alternative would not adversely affect mineral and energy exploration or production.

### • Impacts on Local Economic Conditions

With this alternative, no substantial changes are expected in existing overall patterns and trends of population, employment, and new local income



## LITTLE ROCKIES WSA

distribution as a result of activities in the WSA. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the oil and gas, uranium, silver, or other minerals in the WSA were developed, it would lead to an increase in employment and income for Wayne and Garfield Counties. However, the probability of economic development of minerals within the WSA is low, with the exception of some potential for uranium and associated minerals.

Mineral activity as a result of exploration and development of uranium and associated minerals could have a small beneficial effect on the local economy. Employment of 15 persons in permanent jobs would increase the present total employment of Garfield County by less than 1 percent or Wayne County by 1.8 percent. The effect would be less as population and employment increase in the future.

There would be no livestock-related economic losses because the existing grazing use (687 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present with \$13,740 of livestock sales and \$3,435 of ranchers' returns to labor and investment.

Recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 to 7 percent per year over the next 30 years. Because recreational use in the area is estimated to increase from between 236 and 1,089 visitor days per year over the next 30 years and overall recreation-related expenditures average only \$4.10 per visitor day, recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 4,480 acres in the WSA open to oil and gas lease that could bring up to \$8,960 additional Federal lease fee revenues per year if they were leased. In addition, new royalties from production on these leases would be possible if oil and gas were discovered. Half of these monies would be allocated to the State, a portion of which could reach the local economy. However, this is not expected since the potential for oil and gas production is low. Collection of livestock grazing fees (\$1,058 per year) would continue. About 50 percent of the grazing fee revenues would continue to be returned to the local BLM office for use in range improvement projects.

Conclusion: Present economic conditions would not be significantly affected. Over the foreseeable future, mineral activity would increase local employment in Garfield County by about 1 percent and Wayne County by about 1.8 percent.

### **All Wilderness Alternative (Proposed Action) (38,700 Acres)**

#### **• Impacts on Wilderness Values**

Designation and management of all 38,700 acres as wilderness would contribute to the preservation of the wilderness values in the Little Rockies WSA. The potential for surface-disturbing activities would be reduced through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be protected on all 38,700 acres. Solitude and primitive and unconfined recreation would be protected on approximately 27,700 acres that meet and 11,000 acres that do not meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including cultural values, geologic features, Class A scenery, special status plant and animal species, and wildlife associated with wilderness, would also be protected.

Although protected, complete preservation of wilderness values would not be assured because of valid existing rights. In the foreseeable future, disturbance of up to 3 acres is anticipated from exploration and development of mining claims in the southern portion of the WSA. Wilderness values of naturalness and opportunities for solitude and primitive recreation would be directly lost on the disturbed areas. Opportunities for solitude and primitive recreation would also be indirectly reduced in quality on adjacent portions of the WSA during the period of activity. As much as 2 percent (774 acres) of the WSA would be so affected.

In most cases, impacts on special features from allowable development would not be significant because disturbance would be minor involving only 0.007 percent of the WSA. In addition, appropriate measures would be taken to protect cultural values and special status species prior to any surface-disturbing activity, and it can be assumed that impacts to these values would not be significant.

Mitigation to protect wilderness values would be applied, but loss of wilderness values would be



## LITTLE ROCKIES WSA

allowed if development involving valid existing rights could not be otherwise achieved. All in all, the anticipated disturbance would not be substantially noticeable in the area as a whole.

Over the long term, there would be no potential for loss of wilderness values due to development of new leases and mining claims.

The gradual increase in visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values.

This alternative would enhance and complement the NPS proposal for wilderness designation and management of the contiguous portion of the Glen Canyon NRA.

Conclusion: Wilderness values would be preserved overall. In the foreseeable future, naturalness and opportunities for solitude and primitive recreation would be directly lost on 3 acres and opportunities for solitude and primitive recreation would be indirectly reduced in quality on up to an additional 774 acres of the WSA. Class A scenery would be reduced in quality in disturbed areas. Water flowing through Trachyte Creek would be maintained.

- Impacts on Water Resources

Development and use of up to 3,000 acre-feet of water per year for mining and irrigation upstream of the WSA could be hampered or restricted because changes in use, changes in point of diversion, or transfer of water rights could be protected by the Federal government to maintain flow through the wilderness to protect wilderness-related values such as riparian vegetation.

Conclusion: Use of water upstream of the WSA could be hampered or restricted.

- Impacts on Mineral and Energy Exploration and Production

- Leasable Minerals

No exploration or development of oil and gas is occurring within the WSA and none is anticipated as there are no leases in the WSA. None would be issued prior to or following wilderness designation.

Exploration for and development of a potential in-place resource of less than 10 million barrels of oil and less than 60 billion cubic-feet of natural gas recoverable would be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of potential oil and gas recovery.

- Locatable Minerals

Approximately 620 acres are under mining claim within the WSA. Exploration, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. Up to 3 acres could be disturbed due to exploration and development in the southern portion of the WSA. The most serious impact to minerals would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of less than 50,000 metric-tons of copper, 500 to 1,000 metric tons of uranium, 100,000 troy oz of gold, and 5,000,000 troy oz of silver would be foregone. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). There may be potential for the production of uranium and associated minerals in the Four Mile Canyon area. Much of the deposits are under existing claim and could be developed.

Conclusion: There would not be a significant loss of potential for oil and gas recovery. The potential to produce an unknown but likely insignificant quantity of locatable mineral resources would be foregone.

- Impacts on Local Economic Conditions

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (Table 10), as well as loss of potential increases in income and Federal revenues that could occur under the No Action/No Wilderness Alternative.



## LITTLE ROCKIES WSA

The potential for mineral development in the WSA is low with the exception of uranium and associated minerals. Mineral activity associated with exploration and development of uranium and associated minerals could have a small beneficial effect on the local economy. Employment of five persons in permanent jobs would increase the present total employment of Garfield or Wayne County by less than 1 percent. This effect would be further reduced as population and employment increase in the future. This represents 10 jobs less than what would be expected with the No Action/No Wilderness Alternative. In addition, wilderness designation would preclude new claims from being established in the WSA and any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$13,740 of livestock sales and \$3,435 of ranchers' return to labor and investment.

Nonmotorized recreational use could increase at a rate of 2 to 7 percent annually. Related local expenditures would be small (average of \$4.10 per visitor day Statewide).

The loss of 4,480 acres which could be leased for oil and gas would cause a loss of up to \$8,960 per year of lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production could also be foregone. However, this would not be a significant impact since potential oil and gas production from the WSA is small.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. No commercial outfitters use the WSA on a regular basis, but designation could lead to more commercial recreational use in the area.

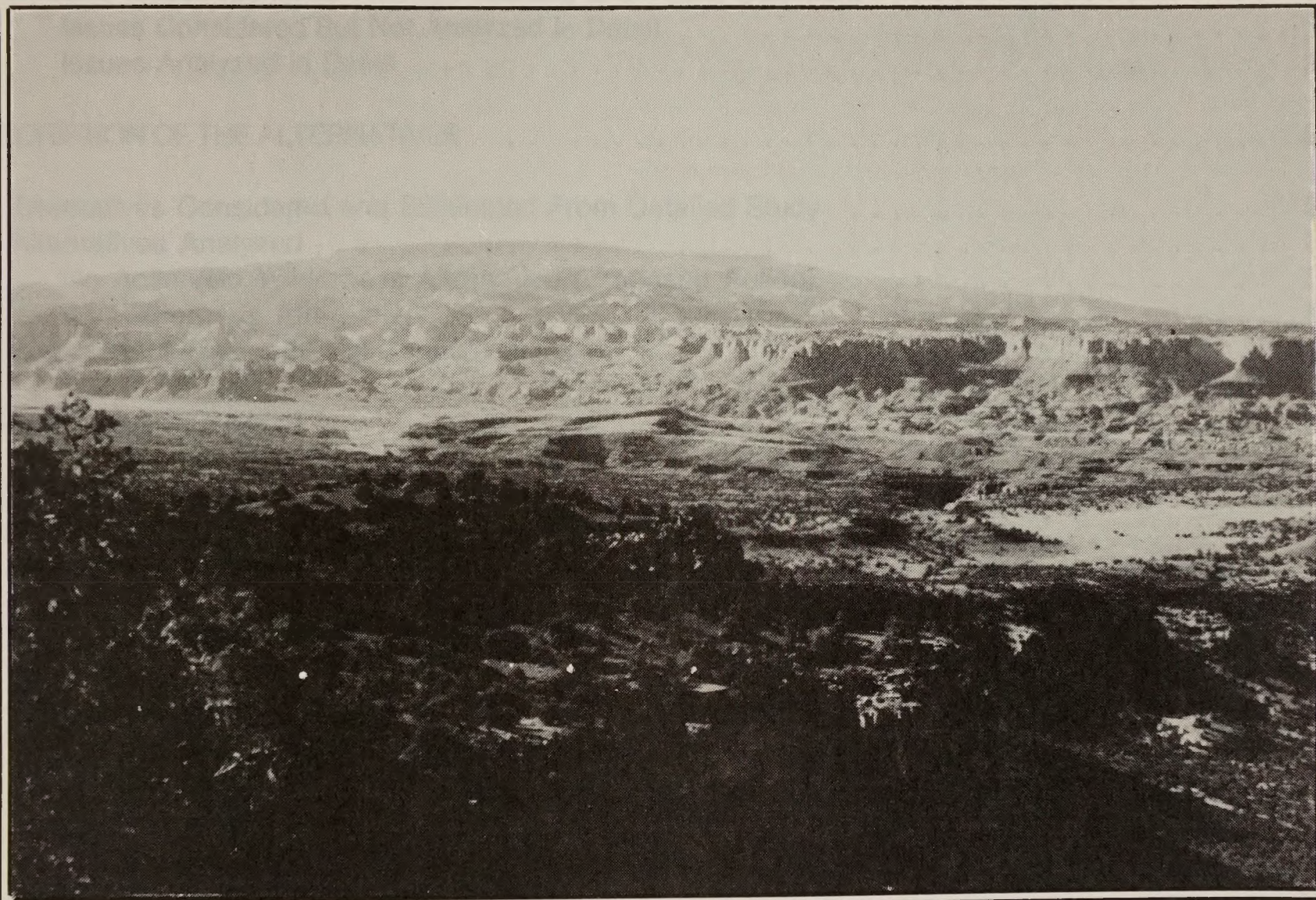
Conclusion: In the foreseeable future, wilderness designation would not significantly effect local economic conditions. Benefits to the local economy from mineral development would be slightly reduced by wilderness designation by a reduction of 10 jobs in the locatable mineral industry.



INTRODUCTION

General Description of the Area  
Changes for the Final EIS

# Fremont Gorge WSA



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# FREMONT GORGE WSA

(UT-050-221)

## INTRODUCTION

### General Description of the Area

The Fremont Gorge WSA consists of 2,540 acres of public land managed by the Utah BLM Richfield District. This WSA was dropped from wilderness study status by the Secretary of the Interior on December 30, 1982, due to its small size. As a result of a decision of the Eastern District Court of California (Sierra Club vs. Watt, Civil No. 5-83-035 LKR, dated April 18, 1985), it is in WSA status and is analyzed in this EIS in accordance with: (1) general land use planning provisions of Section 202 of the FLPMA; and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres if they are adjacent to land with wilderness potential administered by other Federal agencies. It is located immediately west of Capitol Reef National Park, approximately 3 air miles east of Torrey, Utah, in Wayne County. In general, this province is characterized by arid and semiarid climate, deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

Rainfall averages approximately 7 inches annually, with the greatest precipitation periods being April and May and July through October. Temperatures can range from under 0 degrees Fahrenheit (F) in the winter to over 100 degrees F in the summer.

### Changes for the Final EIS

In addition to the changes noted in the Introduction to Volume IV, the following change specific to the WSA has been made since publication of the Draft EIS.

The anticipated surface disturbance presented in the Draft EIS (160 acres) was based on the assumption that all mineral and other resources potentially within the WSA would be developed sometime in the future without consideration of technical or economic feasibility. In response to public comments relative to the feasibility of developments, the disturbance estimates have been revised to focus on activities projected to be feasible within the foreseeable future (see Appendix 6 in Volume I). This resulted in a reduction of surface disturbance estimates from the 160 acres reported in the Draft EIS to no surface disturbance in the foreseeable future for the Final EIS.

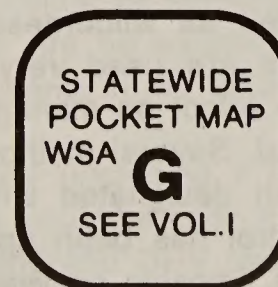
### Specific Issues Identified Through Scoping and Public Comment

#### • Issues Considered But Not Analyzed in Detail

In addition to the issues discussed and eliminated from further consideration in the Introduction to Volume IV (i.e., impacts on land use plans and policies and impacts on water rights), the following issues or impacts specific to the Fremont Gorge WSA were considered but are not analyzed in detail in the Final EIS for the reasons described below.

1. Air Quality: The public has expressed concern that wilderness designation could lead to redesignation of WSAs from the existing Class II PSD classification, to the more stringent Class I rating. A PSD Class I area could restrict future industrial developments. Since the BLM Wilderness Management Policy (BLM Manual 8560) states that BLM will manage all wilderness areas to comply with the existing air quality classification, wilderness designation or nondesignation would not cause the air quality classification to change. The decision to change air quality classification is the prerogative of the State of Utah, rather than BLM. In addition, there are no anticipated developments in the Fremont Gorge WSA. Therefore, impacts on air quality are not analyzed in detail for the Final EIS.

2. Geology and Topography, Soils, Forest Resources, Visual Resources, and Cultural Resources: Estimates of surface disturbance without wilderness designation have been revised downward from the 160 acres reported in the Draft EIS to none. Given this new scenario, impacts on those resources listed above would not occur. There are no proposals for developments, harvests or other uses for soils, forest resources, or cultural resources which would be precluded by wilderness designation. Therefore, impacts on geology and topography, soils, forest resources, visual resources, and cultural resources are not issues in this Final EIS.





## FREMONT GORGE WSA

3. Vegetation and Wildlife Including Special Status Species: Given the scenario of no anticipated soil surface disturbance, there would be no effects on vegetation or wildlife, including special status plant and animal species which may occur in the WSA. Therefore, impacts on vegetation and wildlife are not analyzed in detail for the Final EIS. Special status plant and animal species are discussed in the special features portion of the Wilderness Values section of the Final EIS.

4. Mineral and Energy Exploration and Development: The public has expressed concern that wilderness designation would interfere with or prevent mineral exploration, development, and production.

There are no existing oil and gas leases within the WSA. Potential oil and gas deposits are small with a low certainty that they exist. There are no mining claims inside the WSA and projected uranium and other locatable mineral deposits are thought to be small with a low certainty of occurrence. More accessible deposits of saleable minerals (building stone) exist outside the WSA. For these reasons, mineral exploration or development would not occur in the foreseeable future with or without wilderness designation (see Appendix 6 in Volume I). Therefore, impacts on mineral and energy exploration and production are not analyzed in detail in the Final EIS.

5. Livestock Management: The public is concerned that wilderness designation would interfere with livestock management by placing restrictions on access for maintenance of existing range improvements, moving of livestock, and by preventing future range improvements, and placing restrictions on predator control. However, under the Wilderness Management Policy (BLM Manual 8560) there shall be no curtailments in grazing simply because an area is wilderness. Grazing reductions have already been imposed as a result of normal BLM livestock management requirements.

There are no proposed rangeland developments which would be precluded by wilderness designation. Three-quarters of a mile of way would be closed should the area be designated as wilderness. However, since motorized vehicles are used very little in livestock management, little effect on management of livestock grazing is expected. Several methods of predator control are allowed in designated wilderness and very little predator control has been applied to the WSA. For these reasons, impacts on livestock management are not significant issues for the Fremont Gorge WSA.

6. Recreation and Economic Conditions: There are no existing or anticipated proposals for lands or realty activities which would be impaired with or without wilderness designation, because no economic developments are expected and because recreational use is only 50 visitor days per year and would remain primitive with or without wilderness designation due to the terrain of the WSA and limited access. Impacts on recreational use and economic conditions are not analyzed in detail in the Final EIS.

### • Issues Analyzed in Detail

The significant issues for the Fremont Gorge WSA are:

1. Impacts on the wilderness values of naturalness, opportunities for solitude and primitive recreation, and special features.

2. Impacts on water uses.

Comments made during the public comment period for the Draft EIS centered mainly on the need for, and adequacy of, the rationale for the BLM Proposed Action; the need for further inventories of resource values; and BLM's determination of the WSA boundary.

Alternatives that would add up to 15,460 acres of Federal and State lands to the WSA were suggested in the public comments. These proposed additions would be mainly south and east of the WSA. This alternative is not analyzed because the inclusion of State lands is not consistent with the BLM's wilderness review guidelines (refer to Volume VII-B, General Comment Response 6.4) and because other public lands were dropped from study during the inventory phase (refer to Volume VII-B, General Comment Response 3.1). See Volume VII-B, for responses to general comments applicable to all WSAs and/or the Statewide analysis and Volume VII-C, Section G, for responses to specific comments about the Fremont Gorge WSA.

## DESCRIPTION OF THE ALTERNATIVES

### Alternatives Considered and Eliminated From Detailed Study

Transfer of several WSAs, including the Fremont Gorge WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214; Ninety-Eighth Congress, 1983). Such a transfer could occur in the future regardless of wilderness status.



# FREMONT GORGE WSA

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS because: (1) BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness; and (2) the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM Wilderness Study Policy requires BLM to determine in its Wilderness Study Report (1) whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency which administers the contiguous wilderness area.

BLM has determined that the Fremont Gorge WSA would not be a viable independent wilderness area if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions, such as relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar nonenvironmental items. Environmental differences, if any, would be due to variations in BLM and NPS mandates and policies (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation and, therefore, are not relevant to the analyses of impacts from wilderness designation.

No other alternatives, except those analyzed below, were identified for this WSA.

## Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action/No Wilderness (Proposed Action); and (2) All Wilderness (2,540 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case. The analysis assumptions presented in the Introduction to Volume IV are also applicable.

### • No Action/No Wilderness Alternative (Proposed Action)

With this alternative, none of the 2,540-acre Fremont Gorge WSA would be designated as part of the NWPS. Although BLM's land use plans are regularly updated, it is assumed that the area would continue to be managed in accordance with the Parker Mountain MFP (USDI, BLM, 1982c). There are no State, private, or split-estate lands located within the WSA (refer to Map 1). The figures and acreages given for the alternative are for Federal lands only.

### • Management Conditions and Constraints

All 2,540 acres would remain open to mineral leasing and sale. There are no leases in the WSA, but future leasing could occur under Category 2 (special stipulations). Building stone permits could be issued for the WSA. There are no mining claims in the WSA; however, development work, extraction, and possible patenting would be allowed on future mining claims.

Although mineral resources would be managed as described above, no locatable or leasable mineral exploration or development is projected for the WSA because the level of known resources and the probability of their development are too low to assume development will occur (see Appendix 6 in Volume I for mineral and energy resource exploration and development projections).

The present domestic livestock grazing use in the area would continue as authorized in the MFP (81 AUMs). There are no existing or proposed livestock developments in the WSA.

All 2,540 acres (including 0.75 mile of existing vehicular way) would be open to ORV use although terrain is limiting and ORV use is rare. There are no roads adjacent to the WSA.



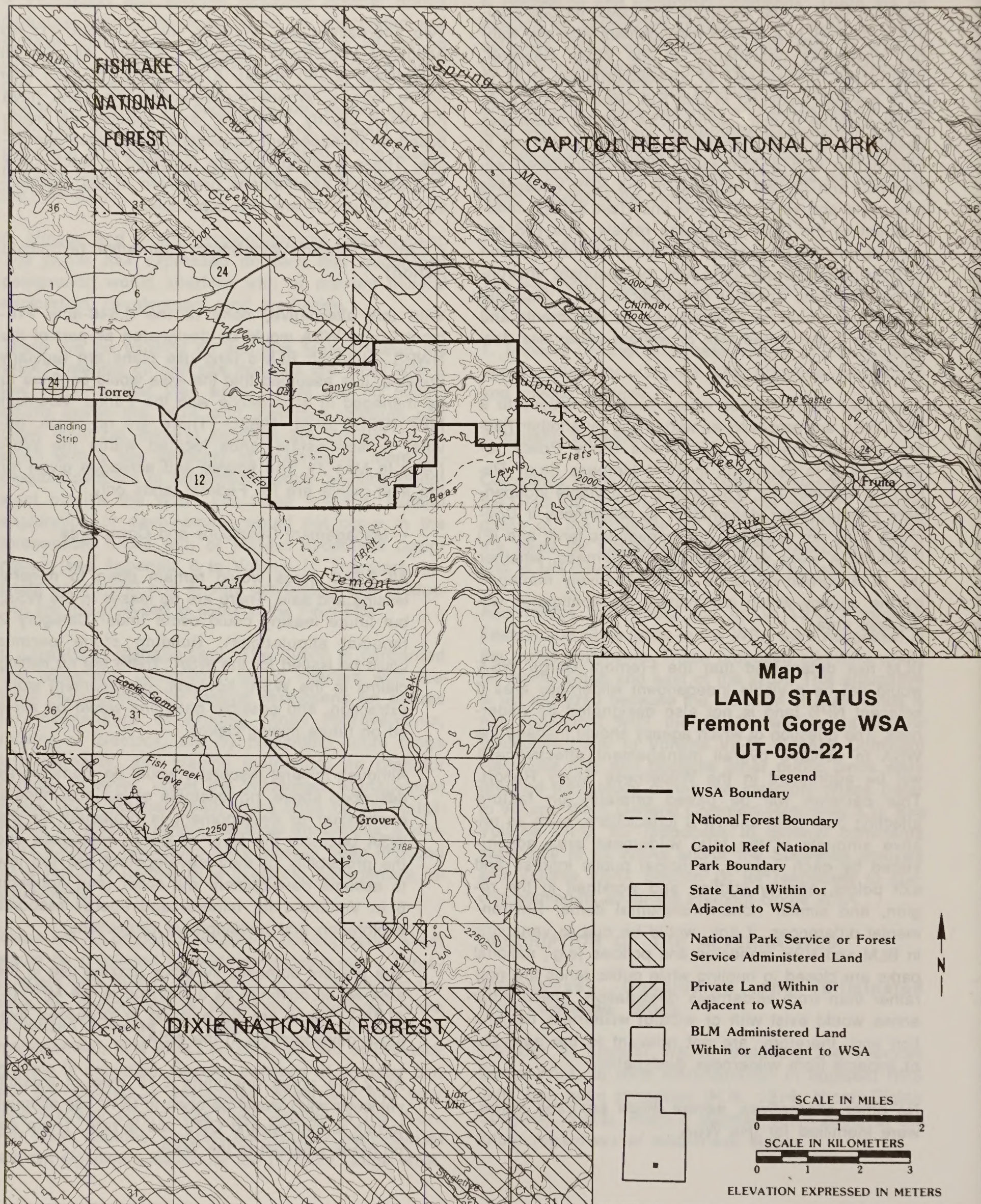
# FREMONT GORGE WSA

R. 5 E.

R. 6 E.

T. 29 S.

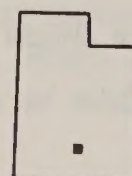
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**Map 1**  
**LAND STATUS**  
**Fremont Gorge WSA**  
**UT-050-221**

## Legend

- WSA Boundary
- National Forest Boundary
- Capitol Reef National Park Boundary
- State Land Within or Adjacent to WSA
- National Park Service or Forest Service Administered Land
- Private Land Within or Adjacent to WSA
- BLM Administered Land Within or Adjacent to WSA



SCALE IN MILES  
0 1 2

SCALE IN KILOMETERS  
0 1 2 3

ELEVATION EXPRESSED IN METERS



# FREMONT GORGE WSA

The area would continue to be managed under VRM Class III.

- Action Scenario

Given the management plans described above and the resources described in the Affected Environment, BLM projects that implementation of the No Action/No Wilderness Alternative would not result in any surface-disturbing activities in the foreseeable future. No locatable or leasable mineral resource exploration or development is projected. No rangeland, wildlife habitat, watershed projects, or other developments are planned.

No disturbance from ORV use is projected because the terrain limits access.

It is projected that primitive recreational use will increase over the current estimated use of 50 visitor days per year at a rate of 2 to 7 percent annually.

- All Wilderness Alternative

With this alternative, all 2,540 acres of the Fremont Gorge WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA is adjacent to Capitol Reef National Park and is contiguous with a 4,060-acre NPS area with potential for wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, the Fremont Gorge WSA could be retained by BLM or transferred to the NPS (refer to Map 1), who would then assume management responsibilities. For the purposes of this analysis, it is assumed that BLM would retain management of the Fremont Gorge WSA following designation. It would be managed in part with the contiguous NPS-proposed wilderness in accordance with the BLM Wilderness Management Policy (BLM Manual 8560) to preserve its wilderness character. A specific wilderness management plan would be developed to govern use and protection of the wilderness area.

- Management Conditions and Constraints

The following are specific actions that would occur with this alternative:

All 2,540 acres would be withdrawn from mineral location and closed to mineral leasing and

sale. There are no mineral leases or claims presently in the WSA.

Present domestic livestock grazing would continue, as authorized in the Parker Mountain MFP. The 81 AUMs would remain available to livestock as presently allotted. No rangeland improvements exist in this WSA and none are planned.

The entire WSA would be closed to ORV use, except to those users with valid existing rights, when approved by BLM in accordance with 43 CFR 8560 provisions. About a 0.75 mile of existing vehicular way would be closed to vehicular use.

Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Action Scenario

No surface disturbance is projected in the foreseeable future. Implementation of the All Wilderness Alternative would preclude mining claim location and mineral leasing. Therefore, no locatable or leasable mineral resource exploration or development would occur following wilderness designation. No rangeland, wildlife habitat, watershed projects, or other developments are planned following wilderness designation.

No disturbance from ORV use is anticipated because of wilderness management restrictions and rugged terrain.

Primitive recreational use will increase over the current estimated use of 50 visitor days per year at a rate of 2 to 7 percent annually.

## Summary of Environmental Consequences

Table 1 presents the environmental consequences of alternatives resulting from implementation of the alternatives analyzed in detail.

## AFFECTED ENVIRONMENT

This section describes the overall environmental setting. This information allows for independent assessment by the public as required by the CEQ guidelines and provides a data base for the cumulative Statewide analysis found in Volume I, as well as the



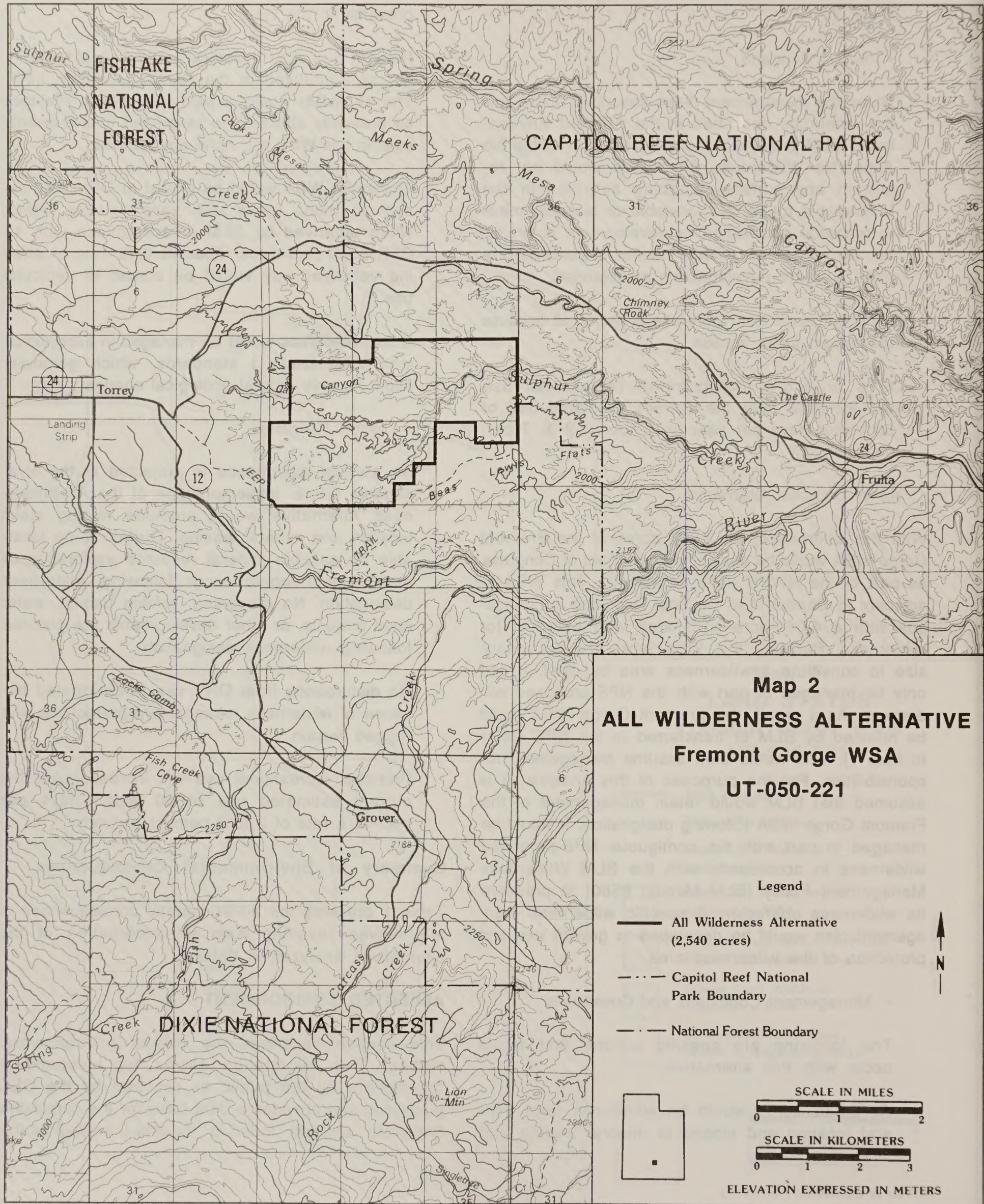
# FREMONT GORGE WSA

R. 5 E.

R. 6 E.

T. 29 S.

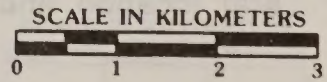
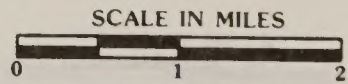
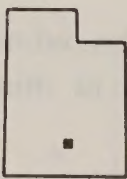
T. 30 S.



**Map 2**  
**ALL WILDERNESS ALTERNATIVE**  
**Fremont Gorge WSA**  
**UT-050-221**

## Legend

- All Wilderness Alternative (2,540 acres)
- - - Capitol Reef National Park Boundary
- . - National Forest Boundary



ELEVATION EXPRESSED IN METERS



# FREMONT GORGE WSA

Table 1  
Summary of Environmental Consequences

Alternatives		All Wilderness (2,540 Acres)
Resource	No Action/No Wilderness (Proposed Action)	
Impacts on Wilderness Values	Wilderness values would not be preserved by wilderness designation. However, wilderness values would not be significantly affected in the foreseeable future because no disturbance is anticipated. Vehicular use of a 0.75 mile of way would detract from opportunities for solitude and primitive recreation in the WSA. Increased visitor use would not affect wilderness values because use is generally primitive in nature and associated with access to the Capitol Reef National Park which is large enough to accommodate an increase in visitation. Nondesignation would not complement NPS goals for wilderness management of contiguous NPS lands.	Wilderness designation would preserve wilderness values throughout the entire WSA. Increased visitor use would be primitive in nature and would be easily absorbed in contiguous NPS lands so no impacts to wilderness values would result. This alternative would complement the wilderness management of contiguous NPS lands.
Impacts on Water Resources	This alternative would not alter present or future water quality or uses because additional disturbance is not expected and no additional restrictions would be placed on access construction or use of water upstream of or within the WSA.	Future water quality and upstream uses would not be significantly affected by this alternative. Constraints for protection of wilderness values in the WSA would not add appreciably to existing constraints for the protection of park values in Capitol Reef National Park.



# FREMONT GORGE WSA

Environmental Consequences of Alternatives in this WSA analysis.

Unless otherwise indicated, information for this section was taken from BLM staff specialists, technical reports, and file documents.

## Wilderness Values

- Size

This WSA contains 2,540 acres. It extends along Sulphur Creek and is approximately 3 miles wide (east to west) and up to 2 miles long (north to south) (refer to Map 1). The WSA is under 5,000 acres but is eligible for wilderness consideration because it is contiguous with 2,115 acres recommended for wilderness by the NPS. Surrounding the NPS-recommended area is a 1,945-acre potential wilderness addition.

- Naturalness

All of the Fremont Gorge WSA is in a natural condition. There is only a 0.75 mile of substantially unnoticeable vehicular way.

No surface-disturbing activities have occurred since the wilderness inventory.

- Solitude

Opportunities to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds.

Although the WSA is of comparatively small size, several winding canyons up to 200 feet deep in the Sulphur Creek and Calf Creek drainages contribute to the opportunities for solitude. The scattered pinyon-juniper woodland vegetation does not enhance opportunities for solitude. There are no outside sights and sounds that would have an adverse effect on solitude anywhere in the WSA.

The entire WSA meets the criteria for outstanding opportunity for solitude when considered with the contiguous NPS lands.

- Primitive and Unconfined Recreation

Opportunities for primitive, unconfined recreation were evaluated by considering miles of potential hiking routes in relationship to the WSA's size, the num-

ber of recreational opportunities present, and an evaluation of the quality of these opportunities. This WSA was determined to have opportunities for 10 different activities. Hiking, nature study, photography, and geological sightseeing were determined to be of average quality; the remaining activities are of below average quality. The overall quality of the opportunities for primitive, unconfined recreation is below average and does not meet the criteria for outstanding opportunities for primitive and unconfined recreation.

- Special Features

The special features identified in this WSA during the BLM Intensive Wilderness Inventory (USDI, BLM, 1980) are scenic, botanic, and ecologic. Ecological and botanical values are related to a high quality riparian habitat along Sulphur Creek.

The WSA has resource values that, although not identified as such during the wilderness inventory, could be considered special features. There are two animal species (peregrine falcon and bald eagle) listed as endangered which may occur in the WSA. In addition, there are five other special status animal species and two special status plant species that also may occur in the WSA. It has approximately 2 miles of perennial stream.

- Diversity

This WSA is in the Colorado Plateau Province Ecoregion and has the PNV type of juniper-pinyon woodland. Refer to the Vegetation Including Special Status Species section for more discussion on ecoregions and PNV types. The ecoregion and PNV types represented by this WSA are compared with existing and other potential National Wilderness Preservation units in the Wilderness Values section of Volume I.

This WSA is within a 5-hour drive from two standard metropolitan statistical areas. These are Salt Lake City-Ogden, Utah, and Provo-Orem, Utah.

## Air Quality

This WSA is classified as a PSD Class II area under the provisions of the Clean Air Act, as amended, and is affected little by air pollution. Visual quality is excellent, with an average visual range from 90 to 130 miles. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (EPA, 1979). Capitol Reef National



# FREMONT GORGE WSA

Park, contiguous with the eastern border of the WSA, is a PSD Class I area.

## Geology and Topography

The Fremont Gorge WSA is in the Canyonlands section of the Colorado Plateau Physiographic Province. In general, the province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments. The WSA is situated near the structural crest of Waterpocket Fold, a large northwest-trending upwarp that forms the western border of the Henry Mountains Basin.

Rocks exposed on the surface of the tract are almost exclusively composed of the Moenkopi Formation of Triassic age (approximately 225 million years old). A small outcrop of Kaibab Limestone is exposed in the eastern portion of the WSA. Small folds and numerous high-angle faults occur throughout the area.

The topography of the Fremont Gorge WSA is characterized by a broad, gently north-northeast sloping plateau, intricately cut by entrenched meandering streams that drain to the east into the Fremont River. The canyons are deep and narrow and are separated by narrow, high, relatively flat-topped ridges.

## Soils

The WSA has only shallow soils with a large portion of exposed rock. Most of the WSA has slight to moderate erosion potential with only 1 percent (25 acres) of the area in stable erosion condition. Table 2 summarizes soil erosion condition in the WSA (terms are defined in the Glossary).

Table 2  
Erosion Condition

Classification	Annual Soil Loss (cubic yards/acre)	Acres	Percent of WSA	Total Annual Soil Loss (cubic yards)
Severe	5.4	0	0	0
Critical	2.7	254	10	686
Moderate	1.3	1,067	42	1,387
Slight	0.6	1,194	47	716
Stable	0.3	25	1	8
Total		2,540	100	2,797

Sources: USDI, BLM, 1978c and 1979c; Leifste, 1978.

According to an unpublished soil survey conducted by the SCS in 1982, the soils in this WSA are rated as moderately saline. It is estimated that undisturbed

soils in the WSA produce an annual average of 117 lb of salt per acre.

Reclamation potential for most of the WSA is poor because of the abundance of shallow, rocky soils.

## Vegetation Including Special Status Species

The major vegetation type (2,400 acres) is scattered pinyon-juniper woodland with associated grasses. Approximately 125 acres consist of rock outcrops. About 15 acres of undisturbed and high quality riparian vegetation is found along Sulphur Creek. No threatened or endangered plant species are known to occur in the WSA. One Category 1 candidate species, Gila caespitosa, and one Category 2 candidate species, Spiranthes diluvialis, may occur in the WSA (see Appendix 4 in Volume I).

The Fremont Gorge WSA is in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, USGS, 1978). The PNV type of the WSA is juniper-pinyon woodland.

## Water Resources

The only surface water in the WSA is about 2 miles of Sulphur Creek, a perennial stream. Several drainages lead into Sulphur Creek Canyon which is prone to flash flooding between July and October. Approximately 5 miles downstream from where Sulphur Creek leaves the WSA it flows into the Fremont River. The Wayne County Water Conservancy District has proposed to construct a dam on the Fremont River for hydro-power purposes. The dam would be located in T. 29 S., R. 4 E., sec. 14. The water return, penstocks, and powerplant would be further downstream between the dam and Capitol Reef National Park.

This WSA is within Water Rights Adjudication Area 95. The 95 area is open to applications not exceeding 0.015 cfs of water for the domestic purposes of one family, stockwatering, and irrigation of 0.25 acre of land. Certain applications exceeding these limits may be approved based on individual merit (UDNRE, DWR, 1988).

The water quality standards for Fremont River and tributaries, through Capitol Reef National Park to headwaters, are as follows: Class 1C (protected for domestic purposes); Class 3A (protected for cold water species of game fish and other cold water aquatic life); and Class 4 (protected for agricultural uses including irrigation of crops and stockwatering).



## FREMONT GORGE WSA

The water quality of Sulphur Creek is not generally fit for human consumption. There is no potential for wells or underground water in the WSA.

### Mineral and Energy Resources

The energy and mineral resource rating summary for the Fremont Gorge WSA is given in Table 3. Appendix 5 in Volume I describes the mineral and energy resources rating system.

Table 3  
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability <sup>a</sup>	Certainty <sup>b</sup>	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Copper	f1	c1	Little to none
Uranium	f1	c1	Little to none

Source: SAI, 1982; USDI, BLM, 1987.

<sup>a</sup>Favorability of the WSA's geologic environment for a resource (f1 = lowest favorability or smallest size deposit; f4 = highest favorability or largest size deposit).

<sup>b</sup>The degree of certainty that the resource does or does not exist within the WSA (c1 = lowest and c4 = highest).

The WSA does not contain any known deposits of materials currently listed as strategic or critical (USDoD, 1988).

#### • Leasable Minerals

There are no known deposits of any leasable minerals in the WSA. Currently, there are no active drilling, mining, or exploration activities for leasable minerals.

#### • Oil and Gas

The geology of the Fremont Gorge WSA is not highly favorable for oil and gas. Wells drilled along the crest of the Waterpocket Fold in the vicinity of the tract have not been successful. However, numerous folds in the vicinity of the WSA have not been adequately tested and the WSA could contain small, widely scattered oil and gas pools (SAI, 1982). The WSA has a low mineral resource potential for oil and gas (Molenaar, et al., 1983; USDI, USGS, 1985c). The size of the hydrocarbon accumulation in such an environment is anticipated to be less than 10 million barrels of oil or 60 billion cubic feet of gas (f2). Based on

the available information, the certainty of occurrence for oil and gas is rated very low (c1).

Under the current land use plan, all 2,540 acres of the WSA are in Category 2 (special stipulations). There are presently no oil and gas leases in the WSA.

#### • Locatable Minerals

There are no known deposits of locatable minerals in the WSA. The WSA has a low potential for any metallic, nonmetallic, or uranium resource occurrences (USDI, USGS, 1985c). Currently, there are no mining claims in the WSA.

#### • Salable Minerals

Within the WSA, there are excellent deposits of building stone in the Moenkopi Formation; however, there are no active operations involving removal of these materials. BLM has established a community pit site for building stone outside and to the west of the WSA, and this site is expected to meet the demand for the foreseeable future.

### Wildlife Including Special Status Species

Animals in the WSA include mule deer, rabbit, squirrel, coyote, fox, and badger. Several species of birds are found along Sulphur Creek depending upon the season of the year. While no peregrine falcon nesting areas have been identified in the WSA, there are nesting areas in the adjacent Capitol Reef National Park. Sulphur Creek Canyon provides additional suitable nesting sites. Peregrine falcon and bald eagle, both endangered species, are likely to inhabit the WSA. In addition, five Category 2 candidate species may occur in the WSA: Great Basin Silverspot butterfly, long-billed curlew, southern spotted owl, Swainson's hawk, and the western yellow-billed cuckoo (see Appendix 4 in Volume I). No fish inhabit the portion of Sulphur Creek in the WSA. All of the WSA is crucial deer winter range. There are no existing wildlife management facilities in the WSA and none are planned.

### Forest Resources

Forest resources consist of widely scattered pinyon-juniper woodland covering 2,400 acres. Much of the WSA is bare rock. Due to the remote location, difficulty of access, lack of demand (no known harvest), and general absence of trees, forest resources are not significant in the WSA.



# FREMONT GORGE WSA

## Livestock and Wild Horses/Burros

This WSA contains parts of the Torrey Town BLM grazing allotment with five permittees. There are an estimated 81 AUMs of livestock forage within the WSA (Table 4). Cattle use the area in the winter months. Because of rugged terrain, livestock use is restricted to the benchlands on the margins of the WSA. Livestock do not use the Sulphur Creek Canyon because of the lack of access.

There are no existing or proposed rangeland improvements in the WSA. No areas have been identified as having vegetation manipulation potential to increase AUMs. The estimated 81 AUMs of livestock forage now permitted represent 1 percent of the total AUMs in the Torrey Town Allotment.

Predator control was not conducted during the 1986 to 1987 period in the grazing allotments that comprise the Fremont Gorge WSA (USDA, APHIS, 1988).

No wild horses or burros range within the WSA.

## Visual Resources

Scenic quality is above average throughout the WSA due to high, colorful canyon walls and riparian vegetation in the Sulphur Creek drainage and side canyons.

The area is not visible from any major travel routes. All 2,540 acres are Class B scenery and are managed as VRM Class III. Appendix 7 in Volume I explains the BLM VRM rating system.

## Cultural Resources

According to BLM Cultural Resource Site Maps (USDI, BLM, 1988a), there are no known archaeological or historical sites within this WSA. However, there is a variety of sites outside the WSA boundaries ranging

from temporary campsites to villages and rock art sites. Therefore, the WSA is thought to have a high potential for the discovery of sites.

## Recreation

Fifteen recreational opportunities (backpacking, camping, dayhiking, fishing, horseback riding, hunting, nature study, photography, rock climbing, rock hounding, skiing; also, archaeological, geological, wildlife, and scenic sightseeing) were evaluated for their quality in this WSA. Ten opportunities were present in varying degrees. No opportunities were considered outstanding in quality. Four activities (i.e., dayhiking, nature study, photography, and geologic sightseeing) are of average quality.

The size and terrain of the WSA does not lend itself to long overnight trips. However, there is some overnight potential for novice hikers or families with small children. The area has good access and connects with a route leading to the Capitol Reef National Park Visitor Center.

Size and terrain do contribute to good opportunities for dayhiking; half-day trips are possible if a car shuttle is used.

Photography and geologic sightseeing are enhanced by the colorful rock walls, riparian vegetation, and seasonal waterfalls.

Visitor use is estimated at under 50 visitor days per year, none of which is commercial or related to use of ORVs.

## Land Use Plans

The WSA is BLM-administered public land. There are no State, private, or split-estate lands in the WSA. Except for minor amounts of livestock grazing, no extensive land use activities are presently occurring in this WSA.

Table 4  
Livestock Grazing Use Data

Allotments	Total Acres	Acres in WSA	Total AUMs	Number of AUMs in WSA	Number and Kind of Livestock	Season of Use	Number of Operators
Torrey Town	9,477	2,540	390	81	133 Cattle	11/01-2/15	5

Sources: BLM File Data.



# FREMONT GORGE WSA

The WSA is entirely within Wayne County. The Final Report, Wayne County Master Planning Project (Call Engineering, Inc., 1976) does not identify recommendations at specific locations. The plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states that "Open spaces should be used for many purposes rather than strictly as wilderness areas." The Wayne County Commission has endorsed the Consolidated Local Government Response to Wilderness (Utah Counties, 1986) that opposes wilderness designation of BLM lands in Utah.

The WSA is managed under the BLM Parker Mountain MFP which allows multiple use with certain restrictions on surface occupancy for oil and gas to protect riparian vegetation as described for the No Action/No Wilderness Alternative. Wilderness is not addressed in the Parker Mountain MFP. However, wilderness designation is part of the BLM multiple-use concept. BLM land use planning is linked to the Statewide Wilderness EIS through inclusion of the present plan as the No Action/No Wilderness Alternative. The Fremont Gorge WSA is contiguous with 4,060 acres in Capitol Reef National Park that are under consideration by NPS for wilderness values. In response to H.R. 1214 (Ninety-Eighth Congress of the U.S., 1983), the NPS evaluated the Fremont Gorge WSA to determine its values for potential addition to the adjacent NPS unit. The NPS dropped the WSA from further consideration and concluded that, should the Fremont Gorge WSA be added to the park unit, it would only be considered a minor buffer addition to the current park boundary (USDI, NPS, 1984). Such an addition would be insignificant in terms of its value and contribution to the NPS area.

## Socioeconomics

### • Demographics

The WSA is located within the boundaries of Wayne County, one of Utah's least populated and most rural counties. From 1970 to 1980, the population of Wayne County grew from 1,483 to 1,950, an overall increase of about 31 percent. Table 5 presents the base-line and projected population data for Wayne County.

It is estimated that between 1980 and 1987, population increased to about 2,090. Population projections for the county indicate that the number of people living in Wayne County in the year 2010 will be about 2,550 for about a 31-percent increase over

1980 levels (Utah Office of Planning and Budget, 1987). The closest community to the WSA is Torrey, a small community of approximately 100 people, located about 3 air miles to the west.

Table 5  
Baseline and Projected Population and Employment Growth  
Wayne County

	1980	1990	2000	2010
Population	1,950	2,150	2,200	2,550
Employment	783	800	800	1,000

Source: Utah Office of Planning and Budget, 1987.

### • Employment

Table 5 shows the baseline and projected total employment for Wayne County to the year 2010.

Wayne County is part of the Central MCD. Table 5 shows the baseline (1980) and projected employment by source for MCD to the year 2010. In 1980 the leading employment sectors for the Central MCD were government (21 percent), agriculture (20 percent), and trade (14 percent). Mining provided approximately 4 percent of the direct employment in the MCD (see Table 6).

It is projected that by the year 2010 employment in the MCD will increase by 51 percent, trade to 17 percent, and nonfarm proprietors to 14 percent of the total. Agriculture will decline to 13 percent, government to 17 percent of the total, and mining will decline 1 percentage point to 3 percent of the total MCD employment.

Table 6  
Central Multi-County District  
Employment<sup>a</sup>

	1980	1990	2000	2010
Agriculture	3,649	3,500	3,600	3,800
Mining	706	700	800	900
Construction	822	1,400	2,200	2,200
Manufacturing	2,047	1,900	2,200	2,600
Transportation, Utilities	589	1,300	1,400	1,500
Trade	2,604	3,400	4,000	4,900
Finance, insurance, Real Estate	347	400	500	600
Services	1,439	2,300	2,900	3,500
Government	3,919	4,100	4,100	4,900
Nonfarm Proprietors	<u>2,278</u>	<u>2,800</u>	<u>3,300</u>	<u>4,100</u>
Totals	18,400	21,800	25,000	29,000

Source: Utah Office of Planning and Budget, 1987.

<sup>a</sup>Includes Juab, Millard, Piute, Sevier, and Wayne Counties.



# FREMONT GORGE WSA

## • Sales and Revenues

Economic-related activities in the WSA include livestock production and recreation. Table 7 summarizes local sales and Federal revenues from the WSA. Appendix 9 in Volume I identifies the multipliers used to estimate sales and revenues.

Table 7  
Sales and Revenues

Source	Estimated Annual Local Sales <sup>a</sup>	Estimated Annual Federal Revenues
Livestock Grazing	\$1,620	\$125
Recreational Use	\$205	—0
Total	\$1,825	\$125

Sources: USDI, BLM, 1982b; Appendix 9 in Volume I.

<sup>a</sup>Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No mining claims, leases, or exploration activities occur within the WSA.

Five livestock operators have a total grazing privilege of 81 AUMs within the WSA. If all this forage were utilized, it would account for \$1,620 of livestock sales and \$405 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced (Dalton, 1982). This study indicates that Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Fremont Gorge WSA is estimated to be about 50 visitor days per year.

The WSA generates Federal revenues from livestock grazing (refer to Table 6). Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittee in the WSA can use up to 81 AUMs per year. Based on a \$1.54 per AUM grazing fee, the WSA can potentially generate \$125 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM District for the construction of rangeland improvements.

## ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This section describes the environmental consequences of implementing the alternatives. Analysis assumptions and guidelines for all alternatives are described in the Introduction to Volume IV. The following analysis is also based on implementation of the Action Scenarios presented in the Description of the Alternatives for the Fremont Gorge WSA.

### No Action/No Wilderness Alternative (Proposed Action)

#### • Impacts on Wilderness Values

Because the WSA would not be designated wilderness with this alternative, the identified wilderness values would not receive the protection afforded by application of the Wilderness Management Policy (BLM Manual 8560). However, no development or disturbance would be expected in the foreseeable future that would affect wilderness values.

Because future vehicular use would generally be limited by terrain to existing vehicular ways, no additional disturbance from ORV activity is projected in the future. Vehicular use of the existing 0.75 mile of way would occasionally detract from opportunities for solitude and primitive recreation.

The gradual increase in visitor use that would occur would not be expected to reduce wilderness values because the additional use is expected to be small, it would be largely primitive in nature, and it would largely be associated with entry into Capitol Reef National Park where it can be adequately accommodated.

Nondesignation would not complement NPS goals for wilderness management of contiguous NPS lands.

Conclusion: Wilderness values would not be protected by wilderness designation. However, wilderness values would not be significantly affected in the foreseeable future.

#### • Impacts on Water Resources

Since no surface disturbance is anticipated, no impacts to water quality are anticipated. Present and future water uses on Sulphur Creek would not be constrained for protection of wilderness values.



## FREMONT GORGE WSA

Conclusion: This alternative would not alter present or future water quality or uses.

### All Wilderness Alternative (2,540 Acres)

#### • Impacts on Wilderness Values

Designation and management of all 2,540 acres as wilderness would preserve the wilderness values in the Fremont Gorge WSA. The potential for surface-disturbing activities would be eliminated through closure of the entire area to future mineral leasing and location and to ORV use, and through management of the area as VRM Class I which allows for only natural ecological change. Naturalness would be preserved on all 2,540 acres. Solitude would also be preserved on all 2,540 acres that meet the standards for outstanding opportunities. Primitive and unconfined recreation would be preserved although no acres meet the standards for outstanding opportunities. Resources that could be considered as special features in the WSA, including riparian vegetation, the existence of a perennial stream, and special status species, would also be preserved.

Vehicular use of the existing 0.75 mile of way would cease with ORV closure, improving opportunities for solitude and primitive recreation.

Increased visitor use that would occur would be primitive in nature and would be managed so as to not result in loss of wilderness values.

This alternative would complement the NPS alternative for wilderness management on contiguous NPS lands.

Conclusion: Wilderness designation would preserve wilderness values throughout the entire WSA.

#### • Impacts on Water Resources

If recognized, a NPS Federal reserved water right claim for Capitol Reef National Park would maintain instream flows in the WSA and protection of wilderness values would not add appreciably to existing constraints on upstream water use.

Downstream water uses would not be affected by a wilderness designation because such uses would be outside the wilderness area.

The proposal to construct a dam on the Fremont River would be not be affected by the All Wilderness Alter-

native because the Fremont River does not flow through the WSA.

Conclusion: Future water quality and uses would not be significantly affected by the All Wilderness Alternative.



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